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ORIGINAL ARTICLES

- Psychosomatic Concepts in Physical Medicine. Barbara Goldberger, M.D., and Jacques Goldberger, M.D. 5
- Physical Therapy and Reconditioning Therapy at Fitzsimons General Hospital, Denver. Major Ora L. Huddleston, M.C., U. S. A. 11
- Pulley Exercises to Increase Joint Movement. George G. Deaver, M.D., and Lieut. Kjell J. Peterson, M. A. C., A. U. S. 17
- Ultraviolet Blood Irradiation Therapy of Apparently Intractable Bronchial Asthma. G. P. Miley, M.D.; R. E. Seidel, M.D., and J. A. Christensen, M.D. 24
- Preventive Measures in Plaster Cast Application. Capt. Arthur M. Pruce, M.C., A. U. S. 30
- Muscle and Joint Examination Charts. Major Spencer T. Snedecor, M.C., A. U. S. 33

•
Editorials 37

•
Medical News 40

•
Book Reviews 44

•
Physical Medicine Abstracts 49

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PSYCHOSOMATIC CONCEPTS IN PHYSICAL MEDICINE

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and

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Diagnosis and therapy in physical medicine, as in other medical specialties, are based on the somatic concepts of anatomy, physiology, pathology and related fields. The study of emotional inadequacies and other psychic problems has been considered as belonging in the realm of neuropsychiatry. Because of this situation, a one-sided approach to medical problems has become routine and physicians have been accustomed to classify and treat disease conditions as either somatic or psychic, according to the predominance of somatic or psychic symptoms. However, when both somatic and psychic factors are involved, an approach is necessary which takes into consideration the bodily as well as the mental factors involved.

The recognition of the importance of psychic factors in conditions hitherto considered essentially somatic offered a challenge to modern medicine to which psychiatric and psychoanalytic research responded by building up the concept of psychosomatic medicine. Leading psychiatrists did great pioneering in this field and are inviting the cooperation of physicians working in other specialties. From the extensive literature we mention here only the contributions of Alexander,¹ Dunbar,² Weiss and English,³ Hinsie⁴ and Lewis.⁵

The object of this presentation is to condense some of the principles of psychosomatic medicine and to outline their application in physical medicine.

Psychosomatic Diagnosis

Psychosomatic diagnosis is based on the concept that mind and body are interrelated in health as well as in disease and that a better understanding of an illness can therefore be expected through evaluation of both the somatic and the mental, especially emotional, factors. Study of the body-mind relationship is essential whenever it has to be assumed that emotional factors are influencing the patient's physical condition. In this situation we should enlarge the findings obtained by clinical diagnosis with investigations into the patient's mental makeup.

This procedure would benefit many patients who are subjects of physical therapy. Obviously, those referred by a neuropsychiatrist for physical treatment do not require psychiatric attention from the physical therapy physician. But there are numerous patients with conspicuous bodily symptoms who never were seen by a neuropsychiatrist to whom a psychosomatic approach would be of great benefit.

It is a daily experience to see a patient with well defined organic disease whose symptoms are nevertheless blurred, distorted or exaggerated and whose response to therapy is altered or erratic because psychic factors are at work. Furthermore, we often encounter symptoms without corresponding patho-

1. Alexander, F.: *The Medical Value of Psychoanalysis*, ed. 2, New York, W. W. Norton Co., 1936.
2. Dunbar, H. F.: *Psychosomatic Diagnosis*, New York, Paul B. Hoeber, Inc., 1943.
3. Weiss, E., and English, O. P.: *Psychosomatic Medicine*, Philadelphia, W. B. Saunders Co., 1943.
4. Hinsie, L. E.: *The Person in the Body*, New York, W. W. Norton Co., 1945; *A Clinical Description of Psychosomatic Medicine*, *M. Clin. North America* 28:525 (May) 1944.
5. Lewis, N. D. C.: *Psychosomatic Factors in Disorders of the Circulatory System*, *M. Clin. North America* 28:565 (May) 1944.

logic changes or striking discrepancies between symptoms and organic disease which we can explain only if we are familiar with the dynamics of mental processes. Unless these factors are recognized, we are not able to relieve the patient's condition satisfactorily.

Here the question arises: Does the specialist in physical medicine render good service to his patient when he meddles in psychiatric work? The answer is affirmative. Dunbar, Hinsie, English, Weiss and many other outstanding psychiatrists are of the opinion that physicians working in the field of somatic medicine should become familiar with modern psychiatric concepts and know how to apply them when they come across patients to whom the psychosomatic approach would be beneficial.

It is important for several reasons that this type of patient should get some psychiatric attention from the physician he consults for his somatic complaints. The most important is, perhaps, the patient-physician relationship.

Any patient who comes to a consultation with somatic complaints centers all his attention on these, and whatever the nature or origin of his condition, he likes to believe that his troubles are restricted to his body. He is unaware that they may have a psychic component, because the psychic factor is more or less repressed, disguised or converted into a somatic symptom. He would resent any suggestion as to the "nervous" nature of his complaints, and if he were unexpectedly advised to see a psychiatrist he would resort to the well known procedure of changing to a diagnostician who would show a "better understanding" of his somatic complaints. The greater the part played by emotional factors the more tenaciously will the patient cling to the belief that his condition is somatic. His attitude is not due to capricious stubbornness or deliberate malingering but rather is the result of a mental process called resistance, the psychodynamics of which have been masterfully described by Freud.⁶

While this resistance is at work any frank discussion of the patient's emotional difficulties is inadvisable. It would rather aggravate than relieve the situation. A suitable way to overcome this difficulty is to take advantage of the patient's increasing attachment to the physician who is caring for the seemingly somatic troubles. Much valuable information about the patient's disturbing psychic problems and his emotional reactions can be obtained if the conversation is tactfully switched from symptoms to personal affairs. Such casual conversations will diminish the patient's resistance and prepare the ground for a more purposeful and systematic discussion of emotional problems.

In order to understand fully the patient's personality structure and the specific contribution of psychologic situations to the development of the present condition and its symptoms one must take the "psychosomatic history." This procedure requires a special technic of questioning, which is similar to that practiced in interviews in mental hospitals.

In the course of interviews the following points should be clarified:

1. The patient's life and family history. The relationship between him and the family members, including special attachments to or conflicts with certain family members. Major changes in life situations and the somatic and mental reactions produced by such changes.
2. What experiences of mental stress and conflicts has the patient gone through? What was the psychologic and physiologic response to such situations? Can any chronologic relationship be established between the onset, development or aggravation of the present symptoms and periods of tension?
3. Had the patient suffered trauma or accident? Under what circumstances did

6. Freud, S.: A General Introduction to Psycho-Analysis, New York, Liveright Publishing Corp., 1938.

this occur? Are the present symptoms or part of them related to the accident? What were the immediate psychic reactions to the accident and how long did they remain manifest? Were there accompanying reactions from the vegetative nervous system, such as symptoms of general shock or neurocirculatory or gastrointestinal manifestations? Does recollection of the accident provoke psychic reactions such as fear, rage or nightmares? Similar material should be compiled concerning military service, combat experience, war injuries and other war experiences.

4. A brief sexual history should give information about the sexual development and present sexual life, about inclinations toward sexual deviations, about traumatic experiences in sexual life in the past and present and about marital maladjustments and other conflicts in sexual life.

At this point we wish to emphasize that material obtained by the interview technic gives information only about the conscious mental processes. The subconscious mind is not accessible in this manner, and for insight into subconscious mental processes mastery of the "free association" method is necessary. This method requires special training and belongs to the sphere of the psychoanalyst.

However, the material gained through such interviews will enable the physician to recognize a great variety of psychic factors which might be at work producing emotional tension. Among such factors are anxiety, distress, apprehension, fear, rage, dissatisfaction, lack of gratification in the material, spiritual or sexual sphere, a feeling of inferiority, frustrations and conflicts with family or environment.

The critical summation of the data obtained by the method outlined will furnish the psychosomatic history. The findings of this history should be compared with the physical findings and properly evaluated. This will enable the physician to recognize to what extent somatic and to what extent psychic factors are responsible for the condition under consideration.

One may divide patients for whom the psychosomatic approach should be considered into three groups:

Group 1. Patients without definite somatic disease to account for their illness.

Group 2. Patients who show organic disease but whose symptoms are out of proportion. In this group mental factors must be made at least partly responsible.

Group 3. Patients with physical diseases caused by disorders of the vegetative nervous system.

In the first group belong patients who have what in neuropsychiatry is called transference neurosis. Such patients are not infrequent in physical therapy practice, as they like to present themselves as somatic complainers. Their symptoms, although they may cause serious suffering, are produced entirely by emotional factors and have to be considered as symbols of violent emotional discharges. While such sufferers usually do not display a "nervous" behavior, they become dramatic when they try to convince the physician of the seriousness of their condition. They crave pity and sympathy. They like to surprise the physician with sudden improvements and unexpected aggravations. Recognition of a transference neurosis is not always easy and it is therefore advisable to call in a psychiatrist when one is suspected.

Patients of group 2 are seen often in the practice of physical medicine. We refer here to those with conditions of traumatic origin due to industrial, traffic or other accidents, war injuries and other disabilities which are accompanied by a manifest or hidden neurotic condition. This type of neurosis is called "ego neurosis," because its mental mechanism differs essentially from that of a transference neurosis.

Such patients may have received neuropsychiatric attention prior to physical treatment. But if the physical findings are prominent and the psychic symptoms are more or less silent, the patient will be referred directly for physical treatment and the concomitant psychic factors will remain un-

detected until discrepancies between the physical status and the symptoms become more evident. In this situation the psychosomatic history will furnish ample information about the patient's emotional reactions before, during and after his accident or injury. It will reveal the role of psychic elements in the symptom formation and demonstrate the reasons for the stubborn persistence of the symptoms. It will also explain the purpose the symptoms are serving, whether they are protecting the subject against a repetition of the dangers which caused the illness, or are helping him to gain compensation for the danger and anguish suffered in connection with the accident or injury.

The physical symptoms are aggravated by psychic elements in this group without the complicated mental mechanisms of transference neurosis, and in consequence the patient is usually able to recall and describe the emotional situations he experienced before, during and after the danger period. Hence, a physician with some psychiatric training can gain insight into his emotional reactions and evaluate the situation.

To the third group belong patients with vegetative neuroses, who show a great variety of physical findings, from functional changes to more or less definite organic disease. It is beyond the scope of this paper to discuss the extensive literature on the subject, but we cannot omit mentioning the basic research of Alexander and his co-workers on the psychodynamics of conversion hysteria and vegetative neurosis. Alexander⁷ said:

The hysterical conversion symptom is an attempt to relieve an emotional tension in a symbolic way; it is a symbolic expression of a definite emotional content. This mechanism is restricted to the voluntary neuromuscular system or sensory perceptive system whose function is to express and relieve emotions. A vegetative neurosis consists of a psychogenic dysfunction of a vegetative organ which is not under the control of the voluntary neuromuscular system. The vegetative symptom is not a substitute expression of the emotion but its normal physiologic concomitant.

In other words, vegetative neurosis develops when emotional tension becomes for any reason protracted or fixed, thus transforming the physiologic transitory emotional reactions of the vegetative nervous system into permanent ones. The clinical manifestations of vegetative neurosis have, therefore, an entirely different meaning than those of transference neurosis.

The sources of emotional tension that may produce a vegetative neurosis are various. They range from overwork, fatigue, physical or mental exhaustion, mental stress, excitement, apprehension, worry and fear to more complicated emotional situations. Most of these elements can be brought to light through the medium of psychosomatic investigation as already indicated.

Patients with vegetative neurosis are met in almost all branches of physical medicine, but most frequently in spa practice. They include persons with neurocirculatory asthenia, cardiac neurosis, benign hypertension and similar conditions. Among the psychogenic gastrointestinal disorders frequently observed are gastric, intestinal secretory or motor dysfunction, mucous colitis and other colonic disorders and, last but not least, gallbladder dysfunction without definite organic change. Although the patients affected derive undeniable benefit from somatic treatment, obviously an intelligent discussion of the emotional problems involved will contribute a great deal to their improvement.

Psychosomatic Therapy

It is well known that physical measures play an important part in the management of neuroses. As Kovács⁸ said, they alleviate symptoms, pro-

7. Alexander F.: *Fundamental Concepts of Psychosomatic Research*, *Psychosom. Med.* 5:205 (July) 1943.

8. Kovács, R.: *Electrotherapy and Light Therapy*, ed. 5, Philadelphia, Leas & Febiger, 1945.

duce a general tonic effect and serve as chief adjuncts to psychotherapy.

The therapeutic value of physical measures in psychosomatic cases has been fully recognized by Dunbar⁹ and others, although they have emphasized that the emotional problems must be treated by appropriate psychotherapy. Dunbar stated that massage, exercise, balneotherapy and similar measures should be employed not for themselves but as part of a general therapeutic scheme based on an accurate psychosomatic diagnosis.

If the psychosomatic history reveals that the patient belongs to group 1, in other words that he is a psychoneurotic who suffers from conversion hysteria or some related condition, he will require major psychotherapy, usually in the form of psychoanalysis. It is not advisable to treat him by physical measures without consulting the psychiatrist.

Patients of groups 2 and 3 can be treated successfully by "minor psychotherapy," which can be undertaken by any physician who is aware, as Dunbar¹⁰ said, of the psychosomatic implication of the problems presented by his patient.

Minor psychotherapy should be skilfully harmonized with well planned and strictly enforced physical measures. The therapeutic action should start with physical measures even if there is basis for suspicion from the beginning that a psychosomatic condition may be present. Otherwise the physician would embarrass the patient, who is seeking help for an illness which he considers purely somatic.

The first step will be, therefore, to select those physical measures which are most likely to alleviate the somatic symptoms. These should be applied with meticulous care at regular intervals. During the sessions the patient should be made to feel at ease; he should be drawn into friendly conversation and induced to talk freely about his somatic reactions and psychic response to the treatment.

The next task will be to prepare the ground for taking the psychosomatic history. For this purpose we switch the conversation to more personal matters to create an atmosphere of confidence in which the patient will become amenable to questioning. In many cases the discussion of the psychosomatic history will itself act as a psychotherapeutic measure, the patient's reactions to physical measures will become appropriate and he will soon make progress toward recovery. If emotional tension persists after the psychosomatic history has been taken, minor psychotherapy should be employed in addition to the physical measures. Whether psychotherapy should be applied in the course of physical treatment or in separate sessions depends on the individual case.

Minor psychotherapy is a method of enlightenment through conversation in the course of which the patient's symptoms are discussed and interpreted. In addition, the connection between his emotional situations and somatic symptoms are explained and evaluated. The material elicited through the psychosomatic history should be completed through further questioning for the purpose of gaining deeper insight into the patient's attitudes in general and into his personality makeup. This can be achieved if questioning is directed so that those facts of the psychosomatic history which have a bearing on the patient's emotional life and behavior are discussed extensively. Vague assertions should be followed up and their meaning clarified. The patient should be encouraged to speak freely and without hesitation about his problems. He should be helped to overcome embarrassment by sympathetic and gentle handling of delicate matters. When he tends to become

9. Dunbar, H. F.: *Emotions and Bodily Changes*, ed. 2, New York, Columbia University Press, 1938.

10. Dunbar, H. F.: *Psychosomatic Medicine*, in *Psychoanalysis Today*, edited by S. Lorand, New York, Med. War Bks., Internat. Univ. Press, 1914.

evasive or circumstantial, if he shows an inclination toward repetitions or indulges in unimportant details, he should be brought nearer to the issues by tactful questioning. The physician should not display a superior attitude or make minimizing remarks. He should never dominate the conversation but should restrict himself to the necessary inquiries and encouragements, as the purpose of the sessions is to provide an outlet for the patient's emotional tension.

In the course of such sessions the patient will come to discuss his emotional difficulties step by step. He will gain confidence and will begin to unburden himself of feelings of inadequacy, of weakened self-confidence, of oppressive life situations and of disappointments; in short he will present his psychic troubles as he sees and interprets them.

At this stage the patient can be taught to realize that fear, hatred, apprehension, frustration and resentment, whether open, hidden or disguised, may cause conflict, and that an unsolved conflict is the underlying cause of the emotional tension. He must be led to understand that emotional tension may cause symptoms as widely different as anxiety states, on the one hand, and aggravation of somatic symptoms, on the other. Finally, when he has gained some insight into emotional processes in general, he will begin to understand the meaning of his own symptoms and will be able to dispel them when they reappear under certain circumstances. With reference to the facts elicited through the psychosomatic history, the patient should be warned that there may be recurrences when situations arise similar to those that caused emotional upsets in the past, and for that reason he should learn how to face them. He should be shown, therefore, the really important factors causing the problem but should be led to find an appropriate solution himself and shoulder his own responsibilities.

The application of psychosomatic principles to vegetative neuroses produces very satisfactory results, especially in the course of spa treatment. Bathing procedures, drinking cures and other balneologic procedures exert physiologic effects¹¹ on the vegetative nervous system comparable to those produced by drugs. They alleviate the somatic symptoms, and a marked improvement in the psychic sphere, characterized by the easing of tension and the fading of anxiety feelings, may soon follow. This effect can be attributed partly to the pleasurable somatic sensations of relaxation or stimulation which often accompany balneologic procedures and partly to the effect of such factors as change of climate and environment and correction and strict regulation of dietary and living habits. All of this has obviously not only a somatic but a psychologic effect on the emotional condition of the patient.

However striking may be the immediate effect of spa treatment on vegetative neuroses, one cannot deny that it does not constitute a causal therapy, because the underlying conflict remains unsolved. It is suggested, therefore, that psychotherapeutic measures should be added to the spa treatment in accordance with the principles previously discussed. The relaxing and stimulating physiologic effect of the cure creates a favorable atmosphere, in which the patient's tension and psychic resistance quickly melt away; his attachment to the physician becomes strongly reinforced, so that the skilful coordination of psychic and somatic measures cannot fail to bring favorable results.

Summary

Psychosomatic conditions are those in which, although somatic symptoms prevail, psychic factors play an important part. Patients who are suffering from such conditions do not always show manifest symptoms of

11. Goldberger, J.: Physiologic Fundamentals of Spa Therapy, Arch. Phys. Med. 26:558 (Sept.) 1945.

emotional imbalance; therefore, the psychic factors which are underlying or complicating their condition often remain undetected, and this fact may delay or prevent recovery. The number of such patients is especially large among war veterans and former war workers, who were under continuous stress¹² for a long period. As such patients are often encountered in the practice of physical medicine, it is imperative that physical therapy physicians become acquainted with the principles of psychosomatic medicine and their application.

219 Broadway, Saratoga Springs, N. Y. and 111 E. 61st St., New York City.

12. Grinker, R. G., and Spiegel, J. P.: *Men Under Stress*, Philadelphia, The Blakiston Co., 1945.

PHYSICAL THERAPY AND RECONDITIONING THERAPY AT FITZSIMONS GENERAL HOSPITAL, DENVER

MAJOR ORA L. HUDDLESTON

Medical Corps, United States Army

Treatment of sick or wounded patients in military installations aims to maintain and restore the maximum functional capacity of the body and mind in the shortest period of time. Before a soldier can be returned to active duty, he must be physically fit and mentally qualified to withstand the strenuous exertion and hardships imposed on him by rigorous combat. For the soldier who is injured so severely that it is impossible for him to return to duty, the aim of treatment is to secure the maximum of his potential functions which will best prepare him to return to civilian life.

Most patients with severe injuries must of necessity receive hospital care for long periods. Unless special precautions are taken, long periods of inactivity are imposed on them. Improper direction of convalescence may cause the development of unfavorable symptoms, such as undesirable personality changes, lowered morale, physical weakness and a delay in the rate of recovery. Idleness tends to promote many of these undesirable traits, which may reinforce one another or augment the primary symptoms. Therapy should be directed, therefore, toward treatment of the individual as a whole, adequate provision being made for care of his mental and emotional reactions as well as for treatment of his physical ailments.

Treatment of the primary abnormalities of a patient's physical and mental makeup constitutes the definitive treatment, whereas the accessory treatments, such as maintaining morale, developing healthy emotional reactions and strengthening the remainder of the physical makeup, may be regarded as reconditioning therapy.

The primary purpose of reconditioning therapy in a general hospital of the Army is to restore sick or injured service personnel to duty in the best possible physical and mental condition. A planned program is employed which occupies the patient's time in physical, educational and recreational pursuits. Rehabilitation in certain branches of the Army embodies a more extensive program, not only involving physical and mental reconditioning but providing extensive general educational and technical training; this additional training program not only may aid in advancing the soldier's rank in the military service, but may make him better prepared to earn a livelihood after he leaves the Army. Such training involves vocational and avo-

cational education, together with emotional and psychologic orientation. The avocational training may be useful as a hobby either while he is serving in the Army or after he returns to civilian life.

The reconditioning program has both therapeutic and preventive aims. The former are designed to hasten recovery, to produce maximal physical fitness and to establish a wholesome mental attitude. The latter serve to prevent lowering of morale, development of unhealthy mental and emotional changes, acquisition of undesirable habits and loss of physical fitness. When these aims are accomplished, maintenance of physical endurance and stamina is assured. Some of the specific objectives of the reconditioning program may be summarized as follows: (1) To establish an intensive activity program designed to keep each patient occupied throughout the day. The program includes drill, calisthenics, games and educational and recreational activities. (2) To improve the patient's morale by keeping him busy. He is subjected to a healthy atmosphere of friendship, enthusiasm, sportmanship and encouragement to get well. Improvement in morale is accomplished in part by diverting his attention from preoccupations associated with his injuries. (3) To dispense as soon as possible with the hospital routine as ordinarily carried out in the hospital wards. (4) To return the patient to a semimilitary status when his recovery permits him to be reclassified as a trainee. (5) To solicit the patient's interest in assuming an active part in the treatment of his maladies and encourage him to get well by periodically demonstrating his progress.

Classification of Patients

Soon after patients are admitted to the hospital they are classified by the medical officer of the ward to which they are assigned. Classification and the activity program for each group may be summarized as follows:

CLASS 4 (convalescent bed patients or semiambulatory patients confined to the ward). Activity program: ward reconditioning exercises supplemented by other activities, including many educational pursuits.

CLASS 3 (ambulatory hospital patients). Activity program: supervised exercises consistent with the limitations imposed by injuries, frequent rest periods and ward reconditioning exercises. As convalescence progresses, the activity program is altered so that the emphasis is on physical training instead of education.

CLASS 2 (trainees capable of six hours of physical training). Activity program: calisthenics, outdoor fatigue, athletic sports and a minimum of educational pursuits during the day.

CLASS 1 (trainees nearest to complete recovery). Activity program: hourly activity program for eight hours. When the trainees included in class 1 have passed satisfactorily the requirements of the obstacle course and of the physical fitness test, they are discharged from the hospital and sent to duty.

Class 1 and class 2 trainees are transferred to the Advanced Reconditioning Service, where they are quartered in barracks buildings. Subsequent treatment during the recovery program is provided almost entirely by the personnel of the reconditioning service.

The ward officers of the surgical, general medical and neuropsychiatric services grade the state of recovery of their patients and transfer them to the Advanced Reconditioning Service when, in their opinion, recovery has been sufficient for them to tolerate the various grades of reconditioning provided by that service. The trainees are assigned to a military unit organized as a line company. Their duties and responsibilities are presented

to them soon after transfer. Activity programs consistent with their physical and mental capabilities are formulated. If the trainee's physical condition is unsuited to the activities of the advanced reconditioning program, he may be returned to the ward from which he was transferred. The generalized physical activities consist of graded physical exertion. The educational program includes: army orientation, moving pictures, lectures, discussions, classroom work, library work, informal talks, demonstrations, military instruction, training films, formal lecture courses and extension courses. Recreation consists of games, sports, motion picture shows, stage shows, dances, concerts, music, reading and time spent on passes in Denver and vicinity. Periodic examinations are made by the medical officer in charge of the reconditioning service and by the ward officers from whose services the patients were transferred. Physical fitness tests are given periodically so that patients will be advanced as rapidly as their tolerance will permit.

While trainees are in the Advanced Reconditioning Service they are given certain privileges and additional responsibilities. They must care for their personal equipment, make their beds, police the quarters and obey the military regulations required by a company organization. Likewise, they are expected to attend classes, participate in activity programs and keep their appointments promptly. Pass privileges are extended so that they may be on pass daily from retreat to bed check. Week end passes which terminate at 11 p. m. (2300) Sunday are issued. Infractions of regulations or orders are punishable by restrictions, removal of pass privileges or assignment of extra duty. As a general rule, soldiers become adjusted rapidly to the new reconditioning regimen. They usually prefer it to the routine for ward patients.

Organization of the Reconditioning Service

The director of the reconditioning service at Fitzsimons General Hospital is a medical officer. He is provided with several officer-assistants of the Medical Administrative Corps who have received special training at a reconditioning training school. His staff is further augmented by non-commissioned officers who likewise have received special training in reconditioning and who as a rule have had a background of physical education training. The duties of the medical officer are both professional and administrative. The officers of the Medical Administrative Corps serve as administrators (executive officer, commanding officer, company commander, personnel officer, education officer, or physical training officer). The non-commissioned officers hold such assignments as sergeant major, company 1st sergeant, duty sergeant and platoon leader. Enlisted personnel conduct the activity program, of the smaller units, supervising physical, educational and recreational activities for all four classes of patients. Some of the staff are assigned to the wards to conduct ward reconditioning for class 4 and some of class 3 patients. Others are responsible for intermediate reconditioning, which is given at the gymnasium or on hospital grounds for some of the class 3 patients and class 2 trainees. Still another group of instructors provides physical instruction for class 2 and class 1 trainees. This training is conducted in the gymnasium and on the athletic field, drill field and obstacle course of the Advanced Reconditioning Service. The education officer and his assistants provide educational activities and are responsible for the recreation program for ward reconditioning and advanced reconditioning sections.

Relation of Reconditioning Therapy to the Hospital

Medical officers in the wards and in the clinics are required to interest themselves in the curative aspects of reconditioning therapy. It is their

responsibility to examine and classify the patients periodically to provide for their satisfactory progression from one class to another during the recovery period. Active support of the reconditioning program is necessary to secure for their patients the maximum benefit from a coordinated therapeutic program. The importance of arranging schedules so that the various departments of the hospital are not hampered in their care of patients cannot be overemphasized. The diagnostic clinics and therapeutic departments must operate so that maximum use is made of available time for examining and treating patients; an appointment plan for examination and treatment of patients is usually the most efficient method. Cooperation of the various sections of the different services in arranging suitable schedules insures a well coordinated treatment program.

Relation of Physical Therapy to Reconditioning

The physical therapy section is a component of the surgical service. It is organized to treat patients referred from any of the professional services. Treatments are administered either in the wards or at the physical therapy clinic. As a rule therapy is started as early as possible, while the patient is still confined to bed, and is continued as long as it is indicated. Detailed instructions for a progressive treatment program are provided for the patients to follow during the remainder of their convalescent period in the ward. The ward therapy program consists usually of active remedial exercises. These are repeated from five to one hundred times at hourly intervals during the day. As recovery progresses, the ward treatments are supplemented by additional treatment at the physical therapy clinic. Apparatus and equipment of various kinds are employed to augment the beneficial results secured in the wards.

Physical therapy is classified as definitive therapy comparable to that administered by other sections of the medical and surgical services. Remedial exercises, which include muscle reeducation, require the personal attention of qualified physical therapists and qualified occupational therapists. This precludes the use of mass production methods, which are commonly employed in group exercise programs. Expert training is necessary to minimize muscle substitution and poor coordination. It is during the early phases of recovery that definitive reeducational procedures are most needed. The importance of specially trained personnel who are adequately qualified to administer the individualized remedial exercises cannot be overemphasized. Such personnel should possess a wealth of knowledge of clinical diseases and a clear understanding of the pathologic processes present in the patients they treat. They should also possess sufficient knowledge to enable them to recognize the limitations of certain kinds of treatment and should be aware of the dangers of improper use of various therapeutic procedures. A thorough knowledge of the indications and contraindications of such treatments is important.

Intelligent use of physical therapy modalities speeds recovery. It assists in the early restoration of function of the injured or diseased structures of the body. It is considered, therefore, a part of the reconditioning or rehabilitating regimen employed to restore the disabled soldier to health and to useful service.

The physical therapy and reconditioning programs are coordinated to supplement each other. The activities of the former are directed largely toward improvement of the injured or diseased structures, and those of the latter toward improvement of the uninjured and diseased parts of the body. The definitive treatments of the physical therapy section likewise are sup-

plemented by therapeutic occupational therapy. For maximum efficiency of the occupational therapy and physical therapy departments, their therapeutic programs should not only supplement but augment each other.

Report of Cases

Medical care of sick or wounded soldiers who receive physical and reconditioning therapy may be illustrated by the following case histories:

CASE 1. — Private first class, aged 31, was wounded by a .31 caliber machine gun bullet, June 26, 1944, in combat in New Guinea. At the time of injury he was lying prone, firing his rifle. The bullet entered the anteromedial aspect of the upper third of the right arm, causing a compound comminuted fracture of the upper third of the right humerus. The bullet emerged from the medial aspect of the arm and lodged in the posterior axillary fold at the level of the ninth rib.

The soldier was given first aid by a corps man in the field and then taken to a battalion aid station, where further first aid was given. At a portable hospital the wounds were treated and debrided and a splint applied to the arm. The patient was then removed by ambulance to an evacuation hospital, where the bullet was removed and a spica cast applied. Subsequently he was transferred to still another station hospital, where the cast was removed, the alignment of the bony fragments checked by x-ray examination and another cast applied. His arm was immobilized by a spica cast for seventy days and then by a partial cast for fourteen days.

The patient was admitted to Fitzsimons General Hospital, November 27. Roentgenograms taken soon after admission showed minor osteoporosis of the bones of the right shoulder, with evidence of a partially healed, severely comminuted fracture of the proximal third of the right humerus. The fragments were united and surrounded with considerable callus; some dorsal angulation was present. There was a large area of rarefaction. Within the fracture site was a sclerotic fragment of bone measuring 1.5 by 0.5 cm., which was interpreted as a sequestrum within an abscessed cavity. Roentgenograms of the chest showed no pathologic changes.

When the partial cast was substituted for the spica cast, physical therapy treatments were begun, consisting of application of radiant heat, massage and active assistive exercises for the right shoulder. After the patient entered Fitzsimons General Hospital a new cast was applied and bivalved. Active assistive exercises in the ward twice daily were started. On December 2 supplemental physical therapy in the physical therapy clinic was added.

Examination at that time showed slight limitation of abduction of the shoulder joint and some limitation of internal and external rotation. There was also limitation of extension of the elbow joint. Some areas of numbness and tingling were noted on the dorsal portion of the right wrist and hand, extending out over the dorsal and lateral surface of the thumb and index finger. Some evidence of motor involvement of the muscles of the hand was found. Voluntary, sensory and electrical diagnostic tests of the neuromuscular system were then carried out on the entire right upper extremity. Results showed a partial reaction of degeneration of the right radial nerve below the triceps muscle and mechanical interference with the action of the abductor muscles in the region of the insertion of the deltoid; the muscles supplied by the lower branches of the radial nerve tested 60 to 80 per cent of normal power. The sensory tests showed an area of hyperesthesia extending from the elbow to the wrist on the radial side of the forearm and an area of hypoesthesia extending from the lateral and posterior surface of the distal half of the forearm down the dorsum and lateral surface of the hand to the interphalangeal joint of the thumb and the middle interphalangeal joint of the index finger.

Supplemental treatment consisted of the application of hot packs to the right shoulder, three changes twice daily, followed by active resistive exercises and graduated stretching of the soft tissues to increase range of motion of the shoulder joint and elbow. The remedial exercises were continued in the ward. Reconditioning ward therapy was given twice daily, consisting of such exercises as the "neck firm and on toes, squat and up," shoulder blade squeeze, curl and twist, front kick, the bobber, the hip raiser, the stair climber and the four count breather. In a short time these were supplemented by calisthenics and gymnastics in the gymnasium of the reconditioning service.

With this program, return of function to the muscles of the shoulder girdle was rapid, range of motion approached normal and muscle power increased to 90 per cent or more. The general health and vigor of the patient improved. The areas of hyperesthesia and hypoesthesia decreased, the patient was transferred to the Advanced

Reconditioning Service and physical therapy treatments were discontinued. At the time of writing the patient was almost entirely recovered and was expecting a furlough before being sent back to active duty.

CASE 2. — Private, aged 20, was wounded in northern France, June 16, 1944 by a rifle bullet which penetrated the right anterior chest wall. It traversed the lower lobe of the right lung and the diaphragm and penetrated the liver, producing a hepato-bronchopleural fistula. A biliary fistula of the right upper part of the abdomen developed secondary to the injury to the liver. The patient was given first aid on the battlefield and taken to an evacuation hospital, where a laparotomy was performed, the injury to the diaphragm and liver repaired and chest wound closed. On July 4 he was evacuated to a general hospital in England, where he was given penicillin therapy. On July 17 a thoracotomy with external drainage was performed. He continued to have a fever and on August 4 he was evacuated by ship to the United States, being transferred to Fitzsimons General Hospital, September 29.

The patient continued to receive penicillin. Roentgenograms of the chest taken at another general hospital had revealed a right pyopneumothorax with a fluid level to the seventh rib. Six small metallic fragments were seen in the region of the liver. In spite of the penicillin therapy the patient's course remained septic and he continued to cough up bile-stained sputum. Bile continued to drain from the chest wound. Roentgenograms of the chest October 4 showed a partial pneumothorax of the right side of the chest with evidence of pleural retraction of about 6 cm. from the costal wall in the midlung field. There was also evidence of pleural thickening, but no evidence of fluid. The right part of the diaphragm was found to be high and the costophrenic sinus obliterated. A defect in the ninth rib, right posterior, was noted. The x-ray diagnosis at that time was partial pneumothorax, right side, marked pleural thickening and no evidence of fluid.

On November 28 a thoracotomy and decortication of the lung was performed. A chronic empyema cavity with an approximate capacity of 500 cc. was found. This was emptied; both the parietal and the visceral pleura were found to be extremely thickened. The lung was mobilized from the visceral pleura and distended by positive intrapulmonic pressure. On October 9 thoracotomy was done and a drain was introduced into the empyema cavity and left in position.

Physical therapy was instituted after the patient's general physical condition was sufficiently improved. Breathing exercises, shoulder exercises and posture training were instituted December 5. Progress was rapid, and the patient was transferred to the Advanced Reconditioning Section, where he underwent strenuous physical reconditioning. His program included calisthenics, active exercises and active resistive exercises. He was assigned to class 2 and was making a satisfactory recovery. It was expected that in due time he would be promoted to class 1 and then sent to the Disposition Board for examination and reassignment.

CASE 3. — Corporal, aged 25, on routine physical examination for officers' candidate school showed x-ray evidence of peribronchial infiltration in the base of the left lung suggestive of bronchiectasis. He was hospitalized May 18, 1944 at a station hospital. It was then discovered that he had a mildly productive cough which had begun in the winter of 1943. The symptoms had never been severe enough to require hospitalization or to make him go on sick call. He described a grating sensation in his chest which developed on deep breathing. Physical examination gave essentially negative results except to disclose a wheeze over both lower hilar areas. The hospital course was uneventful except for an occasional elevation of the temperature to 99 F. Injection of iodized oil into the lung revealed saccular bronchiectasis of the left lower lobe. Postural drainage and use of potassium iodide resulted in some improvement in the cough. The blood studies were essentially normal. Streptococcus was found in the sputum. Physical examinations revealed moderate postnasal drainage and moderate nodular lymphoid hyperplasia of the pharynx.

The patient was transferred on August 8 to Fitzsimons General Hospital where he was reexamined and the original findings confirmed. Bronchoscopy was performed on August 19 and slight thickening of the mucosa of the left lower bronchial tree noted; the right bronchial tree appeared normal. No excessive secretion was present. On August 26 bronchograms of the left lung showed cylindric bronchiectasis of the lower lobe. The lingula of the upper lobe of the right lung appeared normal. On October 6 a left thoracotomy was performed and the lower lobe of the left lung removed.

The postoperative course was uneventful and recovery has been satisfactory. Breathing and shoulder exercises in the ward were instituted the third postoperative day and continued for two weeks, and the patient was then transferred to the Advanced Reconditioning Service. The shoulder exercises consisted of taking the arm

through a complete range of motion, supplemented by repeated passive exercises. Later these were changed to active assistive exercises and active exercises of the muscles of the shoulder girdle. The shoulder exercises were unilateral and confined to the operative side. The breathing exercises included forced respiratory movements involving deep inspiration and expiration, causing contraction and relaxation of the primary and accessory inspiratory and expiratory muscles. After the patient's transfer to the reconditioning service, the exercises were directed toward increasing still further the vital capacity of the lungs, strengthening the shoulder girdle and increasing the power of the muscles of the rest of the body. They consisted principally of active exercises with Indian clubs, rowing machine, pulley weights and dumbbells and of resistive exercises including push-ups, chin-ups and pull-ups. Swimming was included in the latter part of the training program, with emphasis on the Australian crawl. When last examined, the patient had attained almost complete recovery.

PULLEY EXERCISES TO INCREASE JOINT MOVEMENT

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Disabilities from orthopedic conditions usually result in limitations of motion at the joint and loss of muscle strength. The purpose of exercises is to regain normal range of motion and muscular strength.

Usually the strength is rapidly developed by exercises with apparatus offering suitable resistance or by ordinary daily activities, but the increase in range of motion does not respond to these exercises.

Joint stiffness is generally caused by formation of fibrous tissue, resulting in an adhesion, or by a tight capsule. These conditions usually occur when a joint is held immobilized for some time.

Careful stretching exercises will increase the range of motion. Usually the stretching is done passively; that is, the physical therapist or instructor holds the part above and below the stiff joint and stretches the joint to increase its range of motion. This procedure produces a protective muscle spasm due to pain—or fear of pain—and thus the patient resists the stretching. Consequently, progress in increasing the range of motion will be slow, and the patient may have a tendency to dodge the painful movements and develop “trick” movements in order to compensate for his disability. This has frequently caused permanent structural defects.

There is always the possibility that damage may be done in too vigorous passive stretching, as the instructor is sometimes unable to determine how far the stretching should be carried.

The importance of obtaining full range of motion in the early stages of treatment must be realized.

In the exercises to be described, the muscular power of a normal limb is used to increase the range of motion at the stiff joint. As the exercises are completely under the patient's control, the danger of joint injury is minimized.

The equipment required is simple and easily obtainable. The pulleys (fig. 1) should be swivel type, with a wheel diameter of about 1 inch. Adjusters are made of wood about 4 inches long, $\frac{1}{2}$ inch thick and $\frac{3}{4}$ inch wide, with two holes large enough to allow the rope to pass through. The

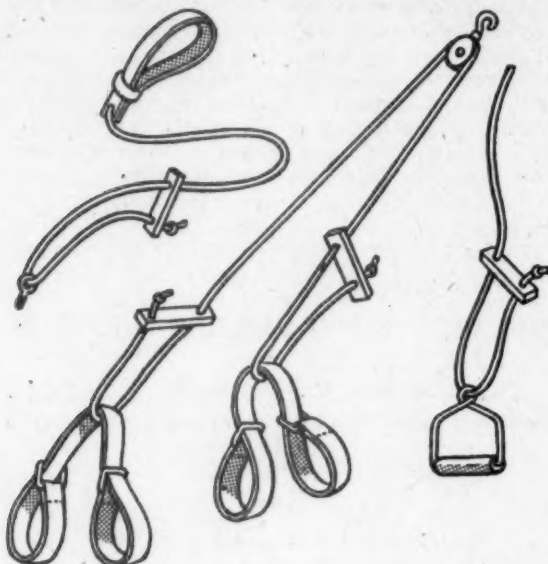


Fig. 1. — The pulleys.

straps are made of canvas, which should be not less than 2 inches wide. The rope may be ordinary sash cord of not less than 7 gage or of similar material and strength.



Fig. 2. — Normal range of flexion and extension at the elbow.

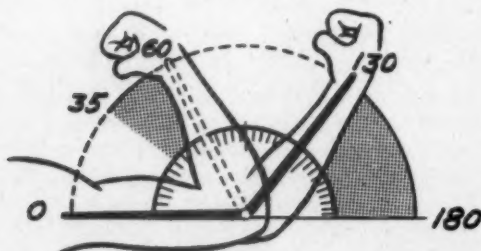


Fig. 3. — Range of motion in a stiff elbow.

Additional equipment includes a mat, a table and a mirror.

To determine the range of motion in a stiff joint it is necessary to compare it with the corresponding normal joint. By using a goniometer, the range of motion is measured and the results recorded in degrees.

To illustrate: The normal range of motion at the elbow joint is between 180 and 35 degrees (fig. 2). If the range of flexion and extension

at a stiff elbow joint is found to be between 130 and 60 degrees, it indicates that there is 25 degrees of limitation in elbow flexion and 50 degrees in extension (fig. 3). The instructor must therefore select the exercises which will increase the range of motion for flexion and extension at the elbow joint. Pulley exercises can be devised to increase the range of motion at almost any joint. The following three exercises are given as samples: elbow extension, shoulder flexion and knee flexion.

JOINT MOVEMENT: Extension of the elbow.

Normal range: 35 to 180 degrees (fig. 2).

Starting Position: Sitting, feet firmly on floor. Injured arm—humerus stabilized, elbow in as much extension as possible. Strap around wrist. Normal arm—elbow in extension, grasp handle (fig. 4).

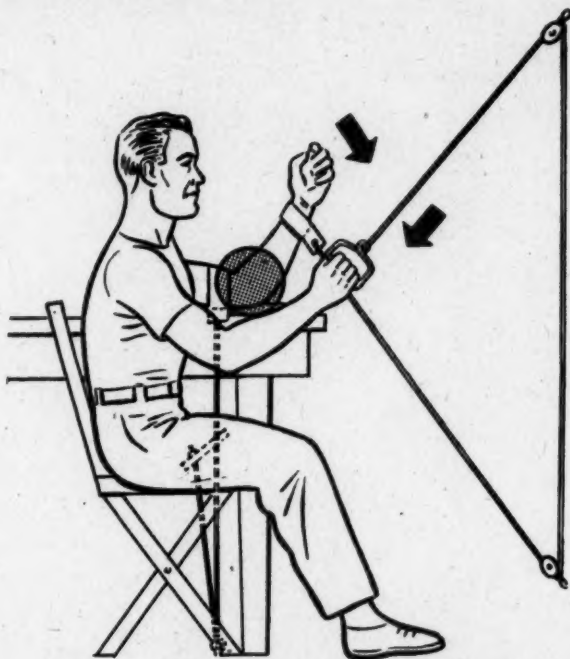


Fig. 4. — Pulley exercise for extension of the elbow.

Movement: Extension of normal arm and flexion of forearm, forcing an extension of stiff elbow.

Precaution: To achieve the best possible result, the patient should be encouraged to relax the muscles of the injured arm.

JOINT MOVEMENT: Shoulder flexion.

Normal range: 180 to 0 degrees (fig. 5).

Starting Position: Patient sits directly under pulley, feet on floor and facing a mirror. By grasping the handles he holds the injured arm in as much flexion as possible and the normal arm at about 45 degree flexion, as illustrated (fig. 6).

Movement: Extend normal arm, thereby causing flexion at the shoulder joint of the injured arm.

Precaution: Maintain proper body alinement during the exercise. Compensation should not be tolerated.

JOINT MOVEMENT: Flexion of knee.

Normal range: 180 to 45 degrees (fig. 7).

Starting Position: Sitting on table. Injured leg is placed in as much flexion as possible. Normal leg is placed in about 135 degree extension.

Movement: Extend normal knee, forcing a flexion of stiff knee.

Precaution: Proper body alinement must be maintained throughout the exercise (fig. 8).

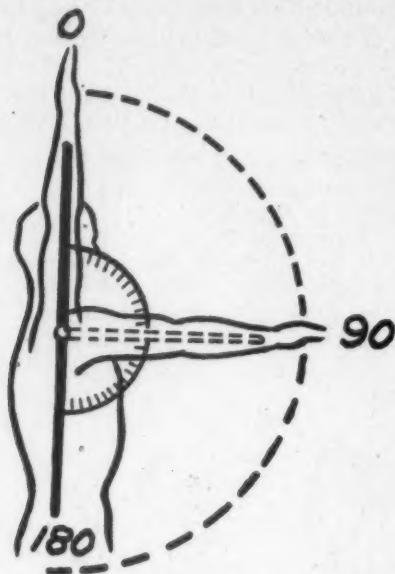


Fig. 5. — Normal range of shoulder flexion.

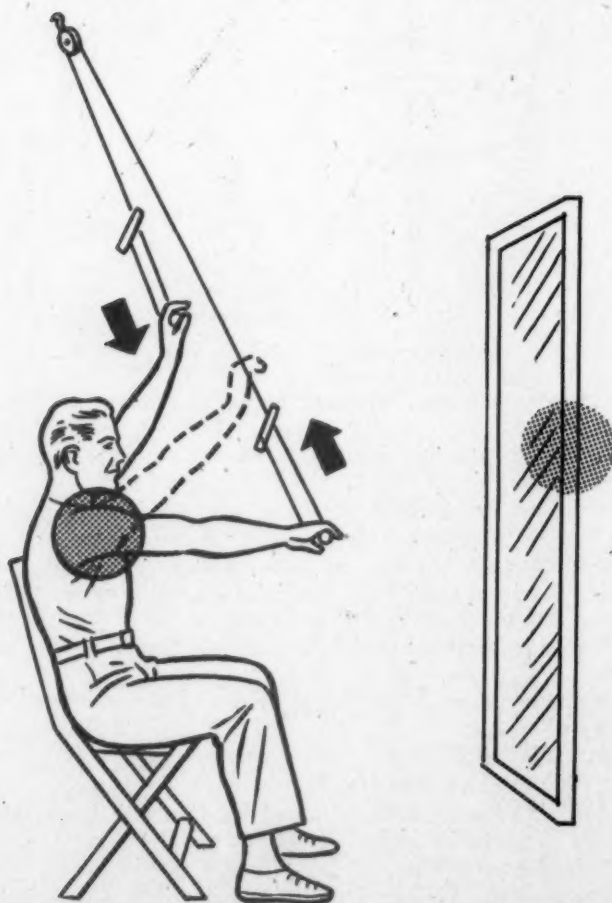


Fig. 6. — Exercise to increase shoulder flexion.

Pulley exercises for almost any joint can be based on these principles. Exercises in most common use are those for shoulder, elbow, hip, knee and ankle.¹

Below are some general technics to be observed in the stretching exercises:

1. No stretching of a joint should be done without a prescription by the medical officer.
2. The patient's confidence, cooperation and interest should be obtained by explaining why he is doing the stretching, how it should be accomplished and what can be expected.
3. The patient should be encouraged to stretch the joint just a little beyond the point where pain sets in. This might be accomplished by inducing him to attempt to relax the muscles which are to be stretched.
4. The stretching should be firm and constant, and when the limit has been reached it should be held a few seconds before the patient returns to

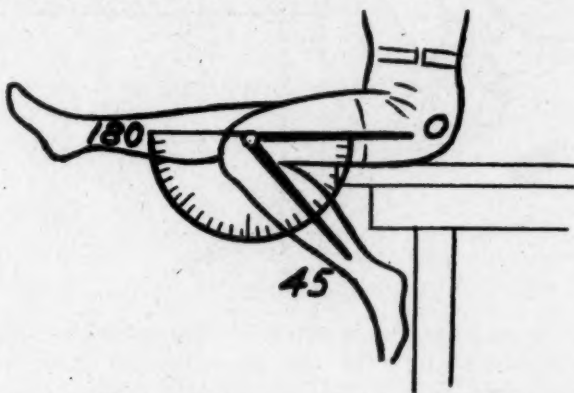


Fig. 7. — Normal range of flexion at the knee.

the starting position. The procedure should be repeated from ten to thirty times daily.

5. Be cautious at all times. A patient may become too ambitious and force the stretching of the stiff joint—disregarding the pain—and thereby cause a sudden increase in range of motion. Such vigorous attempts should be discouraged, as they will only cause damage to the joint and retardation of the joint movement. It is therefore important to advise the patient to perform the exercises gently to obtain gradual and constant improvement.

6. After the patient has been instructed in the technics to be used and how to avoid compensation, constant supervision is not necessary.

7. The joint should be stabilized so that the action takes place only in the joint to be exercised. If it is desired to force an extension of the elbow joint the humerus must be held in place by a strap, so that no movement of the shoulder joint is possible.

8. Proper padding should be used in order to protect parts being exposed to direct pressure.

9. The ropes should always be kept taut and can easily be regulated by the adjusters.

10. The pulleys should be so arranged that the most effective pull will be obtained.

11. The patient should be comfortably placed and should maintain a good body alignment during the exercises. No compensation should be tolerated.

1. "Exercises to Increase Joint Movement" (illustrated), containing a complete list of exercises, can be obtained from the Army Air Force Convalescent Training Branch, Office of Air Surgeon, Washington, D. C.



Fig. 8. — Exercise to increase flexion of the knee.

12. The stretching exercises designed for hip, knee and ankle disabilities are of the non-weight-bearing type and consequently may be used in the early stages of treatment.

13. Frequent measurements should be made to determine progress.

14. In order further to encourage the patient to increase the range of motion of his stiff joint, competitive performances may be arranged. By recording the progress on charts or posters, the patient competes against himself and against patients with the same disabilities.

15. The patient should be told not to depend on a few minutes of exercises and should be encouraged to use his muscles throughout the day in order further to increase the range of motion.

These methods were used in 159 cases of limitation of joint movements at shoulder, elbow, hip, knee and ankle. In all cases definite increase in range of motion was noticed, even after prolonged treatment by passive stretching exercises had failed to produce further improvement.

Report of Cases

CASE 1. — Cpl. B. was injured in a plane crash May 15, 1944, and the left patella was fractured. The leg was in a cast for ten weeks, and after removal of the cast the patient received physical therapy, including passive stretching exercises. On October 23 the patient had a range of motion for knee flexion from 180 to 120 degrees. After using the pulley in the described manner for sixty-four days, he was able to flex his knee from 180 to 80 degrees.

CASE 2. — Cpl. C. underwent an operation for removal of the cartilage of the left knee Feb. 2, 1943. The cast was removed after three months, and the patient received passive stretching exercises. Sept. 2, 1944 he had a range of motion at the knee from 160 to 103 degrees. There had been no noticeable improvement for the last five weeks. After using pulley exercises for two months, he was able to extend the knee to 180 degrees and flex it to 76 degrees.

CASE 3. — Sgt. W. was injured in a jeep accident in North Africa March 1, 1944, receiving a fracture of the right patella. The leg was in a cast for five weeks and

the patient received the first pulley treatment on May 17. At that time he had a range of motion for knee flexion from 180 to 110 degrees. When he was assigned to full duty, July 17, he was able to flex his knee from 180 to 68 degrees.

CASE 4. — Lieut. P. was injured by flak Oct. 7, 1944, receiving a fracture of the medial epicondyle of the right femur. At the initial treatment, December 20, he had a range of motion for knee flexion from 170 to 120 degrees. After using pulley exercises for two months he was able to flex his knee from 175 to 70 degrees.

CASE 5. — Lieut. S. received injuries to his left knee, necessitating removal of the left patella, May 13, 1944. At the initial treatment, July 14, he had a range of motion at the knee from 175 to 120 degrees. To increase this he had received passive exercises for two weeks but it was not until he himself was able to force the movement by pulley exercises that improvement was noticeable. On October 3 he was assigned to limited duty, and his range of motion at that time for knee flexion was from 180 to 72 degrees.

CASE 6. — Lieut. Col. Z., pilot of a B-17, was injured by flak June 17, 1943, receiving a fracture of the left tibia and fibula. After the cast had been removed, in October, he received physical therapy, including passive stretching exercises. In March 1944 he had a range of motion for knee flexion from 180 to 120 degrees. The following two months showed no further improvement. On May 17 pulley therapy was started, and after nine weeks he was able to flex his knee from 180 to 100 degrees. This range of motion was sufficient to enable him to pilot a B-17 for a 2,000 mile flight.

CASE 7. — S/Sgt. B. received gunshot wounds in the left shoulder Nov. 4, 1943 which caused a fracture and dislocation of the shoulder. The upper extremity was immobilized in a cast for eighteen weeks. After the cast had been removed he received passive exercises for six months in order to increase the range of motion of the stiff shoulder and elbow. On Sept. 6, 1944, he had regained normal range of motion at the shoulder but the range of elbow flexion was 150 to 55 degrees. Pulley exercises were then started, and when he returned to limited duty, November 8, he had regained full elbow flexion and lacked only 10 degrees in elbow extension.

CASE 8. — Lieut. M. was injured in plane crash March 4, 1944, receiving a fracture of the right humerus. Owing to complications several casts were used, and the arm was immobilized for six months. Physical therapy, including passive stretching exercises, was used for three months. Jan. 11, 1945 the patient had a range of motion for elbow flexion from 133 to 50 degrees. After using pulley exercises for five weeks, he was able to flex his elbow from 162 to 45 degrees.

CASE 9. — Lieut. L. received gunshot wounds in the right arm June 20, 1944 which caused a fracture of the internal and external epicondyles of the right humerus. The arm was immobilized in a cast for three months and the patient received passive stretching exercises for twelve weeks. December 1 he had a range of motion for elbow flexion from 140 to 35 degrees. After pulley exercises for eight weeks he was able to extend his elbow to 170 degrees.

CASE 10. — Lieut. K. was injured in a plane crash Sept. 9, 1944, receiving a fracture of the right humerus. The arm was in a cast for ten weeks, and when the cast was removed, December 9, the range of motion for flexion of the elbow was from 115 to 50 degrees. After using pulley exercises for three months, he was able to flex his elbow from 171 to 35 degrees.

CASE 11. — Pvt. T. received injuries to the left elbow in an automobile accident Sept. 4, 1944, with fracture of the lower part of the left humerus. After the cast was removed, December 15, he received physical therapy, including passive stretching exercises. Feb. 2, 1945 the range of motion for elbow flexion was from 116 to 40 degrees. After using pulley exercises for twelve days he was able to flex the elbow from 163 to 35 degrees.

Summary

1. The exercises are specifically designed to serve as a method for increasing the range of joint motion and to minimize muscle spasm, which usually occurs.
2. They are completely under the patient's control, and therefore the chances of injury to the joint are minimized.
3. Constant supervision is not necessary.
4. The apparatus is simple and easily obtainable.
5. The progress is recorded on charts and posters, and the patient competes against himself and against patients with the same disability.

ULTRAVIOLET BLOOD IRRADIATION THERAPY OF APPARENTLY INTRACTABLE BRONCHIAL ASTHMA *

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In 1943 we published a preliminary report¹ on ultraviolet blood irradiation therapy for intractable bronchial asthma, stating that we had observed many encouraging clinical effects. Our 1943 report concerned cases observed from Nov. 1, 1938 to Oct. 1, 1942. Further study has substantiated our original statements.

An analysis of 160 consecutive cases is here presented, with special reference to the safe and efficient technic used, the management of the patient and the results observed. The results have been tabulated according to (1) time of maintenance of improvement, (2) effects in different age groups, (3) effects in each of the various etiologic varieties of bronchial asthma and (4) composite effect of the over-all picture.

Knott Technic

The Knott technic of irradiating blood with ultraviolet rays consists, briefly, of withdrawing a predetermined amount of the patient's venous blood, citrating it and passing it through a Knott hemoirradiator, a precision machine which automatically exposes the citrated blood to high intensity ultraviolet energy and returns it to the venous circulation of the patient. This has been described independently in detail by Rebbeck, Hancock, Barrett and Miley, as cited in our preliminary report.

Diagnostic Criteria

The following characteristics were present in all the cases included in this report:

1. Recurrent attacks of wheezy dyspnea with intermittent periods of relief varying in degree and frequency.
2. A marked refractoriness to most standard types of treatment, as judged by the following criteria: (a) failure of the patient to respond to removal of known aggravating extrinsic factors, e. g. dusts, pollens and foods; (b) refractoriness of the patient to all desensitization efforts; (c) refractoriness to bronchoscopy and bronchoscopic "drainage" with or without supplementary use of autogenous vaccine; (d) failure of intranasal operations performed for the relief of nasal obstruction or as a treatment of chronic sinus infection to relieve asthmatic symptoms; (e) temporary or no relief from inhalation of epinephrine or ephedrine preparations, and (f) absence of relief from seasonal changes.
3. An obscure etiologic basis of the asthmatic attacks at the time the patient was first seen, though several types of predisposing factors were believed to have been present originally, e. g. a background of extrinsic asthma, frequently recurring colds, reflex or directly irritative effects arising from lesions in the nose and/or accessory nasal sinuses, psychogenic causes and vague toxemias secondary to equally vague sources of infection or metabolic unbalance.

* From the Department of Pharmacology and the Blood Irradiation Clinic, Hahnemann Medical College and Hospital.

1. Miley, G. P.; Seidel, R. E., and Christensen, J. A.: Preliminary Report of Results Observed in Eighty Cases of Intractable Bronchial Asthma, Arch. Phys. Therapy 24:533, 1943.

4. Absence of demonstrable neoplastic or granulomatous pulmonary lesions as shown by careful roentgenologic examination.

5. Absence of organic heart disease as far as could be judged by a negative history and negative physical, roentgenologic and electrocardiographic findings.

Management of Patient

1. Ultraviolet blood irradiation therapy is administered every four to six weeks until it is felt that the patient's symptoms have remained markedly ameliorated over a two month period; the therapy then is repeated at eight to ten week intervals with the object of reducing the frequency to three or four treatments yearly.

2. Injections of epinephrine or ephedrine are immediately reduced as far as is practically possible.

3. Inhalation of vaporized epinephrine or ephedrine products is continued for the first few months in some cases.

4. Extrinsic aggravating factors are eliminated when possible.

5. Radical operative procedures on the nose and sinuses are not permitted except as emergency measures. This precaution is observed because we feel that bronchial asthma is primarily a systemic disease and that, except in rare instances, the asthmatic patients seen by us after having been subjected to such procedures have not been improved, but, on the contrary, have been seriously debilitated.

6. The use of the bronchoscope has been limited as a rule to a single diagnostic procedure in selected cases, and caution has been exercised in the case of extremely debilitated patients.

General Results

The results reported are from the case histories of 120 patients whose clinical progress was carefully followed. In 40 cases a complete follow-up history was unobtainable.

For practical considerations the results have been defined as follows:

1. *Time of Maintenance of Improvement.* — In apparently intractable bronchial asthma, as in any other chronic disease, one of the chief criteria for improvement is the length of time a patient can be kept relatively symptom free or at least moderately improved. Our results in this respect are shown graphically in chart 1, an analysis of which reveals the following facts:

Forty-three of the 120 patients were observed for less than six months, 44 for six months to one year, 17 from one to one and one-half years and 16 from two to five years (i. e. 33 for more than one year).

Of the 43 patients treated for less than six months, 9 became relatively symptom free, 6 improved, 19 improved slightly and 9 were unimproved. Fifteen (34.8 per cent) responded favorably.

Of the 44 patients treated for six months to one year, 14 became relatively symptom free, 18 improved definitely, 5 improved slightly and 7 were unimproved. Thirty-two (72.7 per cent) were favorably influenced.

Of the 17 patients treated for one to one and one-half years, 7 became relatively symptom free, 8 improved definitely, 2 improved slightly and none were unimproved. Fifteen (88.2 per cent) responded favorably to treatment.

Of the 16 patients treated for two to five years, 9 remained relatively symptom free, 6 improved definitely, one improved slightly and none were unimproved. Fifteen (93.7 per cent) responded favorably to treatment.

It is interesting to note that of 33 persons receiving treatment and care-

ful follow-up observation for one to five years, 30 remained relatively symptom free or improved definitely.

2. *Effects in Different Age Groups.* — Our results varied according to the age of the patient, as is shown in chart 2, an analysis of which reveals the following facts:

Of the 25 patients between 3 and 18 years of age, 16 became entirely symptom free, 7 definitely improved, 1 improved slightly and one remained unimproved. Twenty-three (92 per cent) were strikingly improved.

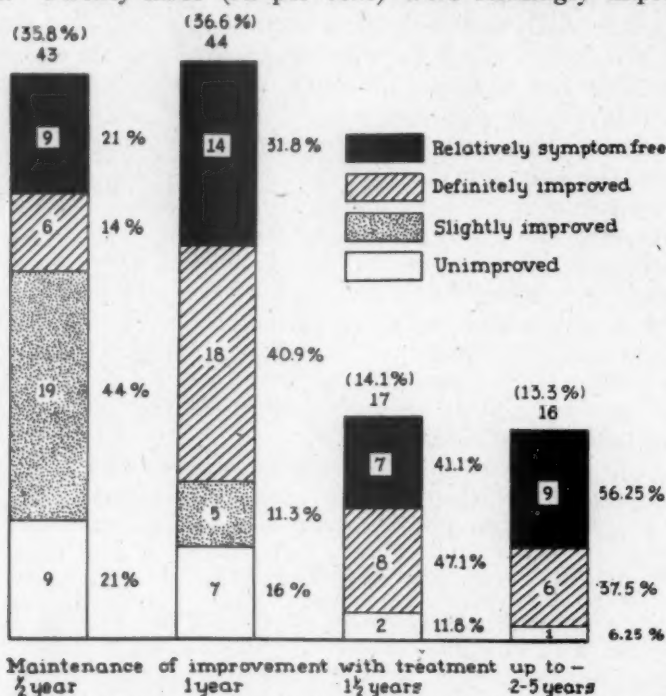


Chart 1. — Time of maintenance of improvement in 130 patients with apparently intractable bronchial asthma who received ultraviolet blood irradiation therapy for six months to five years.

Of the 19 patients between 18 and 30, 11 became relatively symptom free, 5 definitely improved, 2 improved slightly and 1 remained unimproved. In this group 16 (84.2 per cent) showed striking improvement.

Of the 26 patients between 30 and 40, 7 became relatively symptom free, 8 improved definitely, 7 improved slightly and 4 remained unimproved. Fifteen (58 per cent) responded favorably to the Knott technic.

Of the 37 patients between 40 and 60, 5 became relatively symptom free, 15 improved definitely, 8 improved slightly and 9 remained unimproved. Twenty (53.9 per cent) were definitely aided.

Of the 13 patients over 60, none became relatively symptom free, 3 improved definitely, 9 improved slightly and one remained unimproved. Three (23 per cent) can be considered definitely improved.

3. *Effects in Each of the Various Etiologic Varieties of Bronchial Asthma.* — The effects in each of the various etiologic varieties of bronchial asthma are shown in chart 3, an analysis of which reveals the following facts:

Of the 34 patients with an allergy to inhalants (pollen-dust), 10 became relatively symptom free, 15 improved definitely, 6 improved slightly and 3 remained unimproved. Twenty-five (73 per cent) responded favorably to the Knott technic.

Of the 33 patients with an allergy to infection (sinusitis, bronchitis), 5 became relatively symptom free, 11 improved definitely, 9 improved slightly

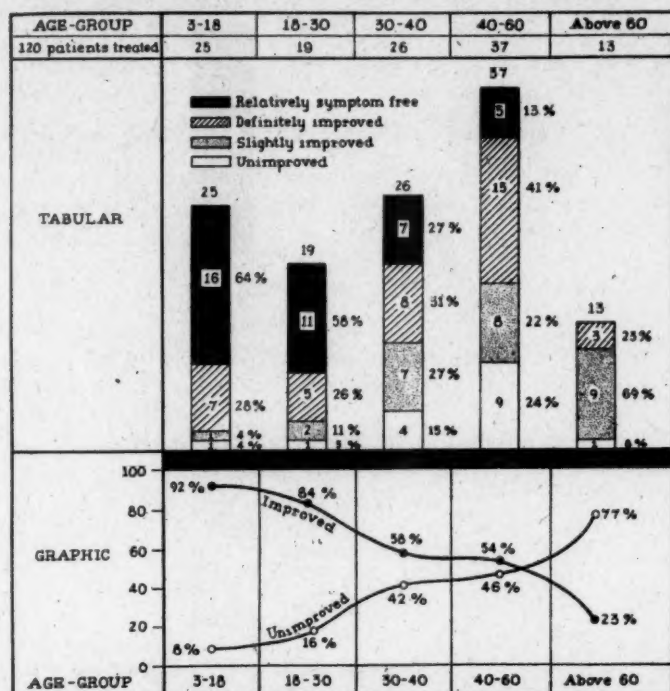


Chart 2. — Effects in different age groups of ultraviolet blood irradiation therapy in 120 cases of apparently intractable bronchial asthma.

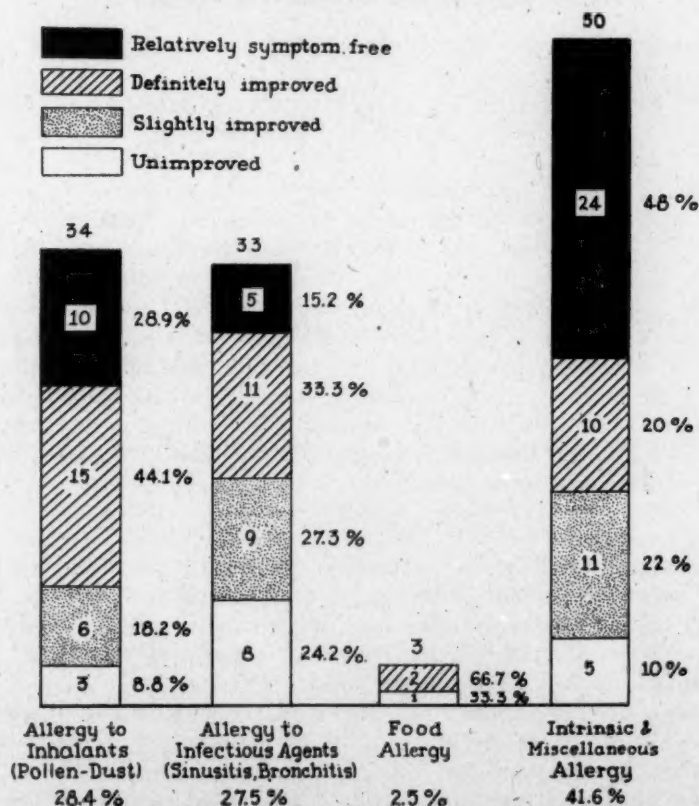


Chart 3. — Effects of ultraviolet blood irradiation therapy on the four chief etiologic varieties of bronchial asthma encountered in 120 patients over a period of five years, namely allergies due to inhalants, infectious agents and food and miscellaneous allergies.

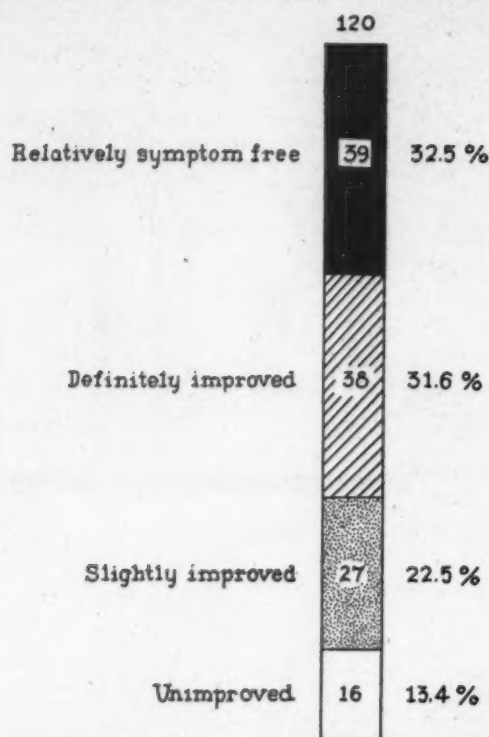


Chart 4. — Composite results in all groups of patients with intractable bronchial asthma following ultraviolet blood irradiation therapy.

and 8 remained unimproved. Sixteen (48.5 per cent) showed striking improvement.

Of the 3 patients with an allergy to foods, 2 improved definitely and one improved slightly. In this group, then, 66.6 per cent were definitely aided.

Of the 50 patients with intrinsic and miscellaneous allergies, 24 became symptom free, 10 improved definitely, 11 improved slightly and 5 remained unimproved. Thirty-four (68 per cent) can be considered definitely improved.

4. *The composite Effect of the Over-All Picture.* — The composite effect of the over-all picture is illustrated in chart 4, an analysis of which shows that of 120 asthmatic patients of various ages and with various etiologic factors, 39 became relatively symptom free, 38 improved definitely, 27 improved slightly and 16 remained unimproved. In the group as a whole, 64.1 per cent showed marked improvement, whereas the treatment of 13.4 per cent can be considered a failure.

Clinical Observations

1. In approximately 50 per cent of these patients a moderately severe asthmatic attack occurred during the first night after the initial blood irradiation. Patients with an obviously advanced type of bronchial asthma were most often affected. Attacks occurred infrequently after subsequent blood irradiations and were always mild.

2. Marked relief in the frequency and severity of the dyspneic attacks was noted after the second or third blood irradiation, given at an interval of two to six weeks after the initial treatment.

3. For the first year it was found advisable to administer ultraviolet blood irradiation therapy eight to twelve times at intervals varying from two to eight weeks.

4. After the first year repetition of blood irradiation two to five times yearly was found necessary to keep most patients free from severe asthmatic attacks.

5. Cyanosis of many years' standing slowly disappeared within a year of initiation of therapy.

6. A marked and relatively permanent increase in the patient's general resistance was observed. Many patients who had been under constant treatment were enabled to lead apparently normal, useful lives with little or no discomfort.

7. A six months withdrawal of ultraviolet blood irradiation therapy after one and two years' use, respectively, in 2 cases resulted in a definite recurrence of moderately severe attacks of wheezy dyspnea. After irradiation was repeated the symptoms again subsided, though apparently more slowly than they had originally.

8. The use of ephedrine or epinephrine inhalants was necessary only rarely for the 77 patients in the improved group after the first three or four months of ultraviolet blood irradiation therapy.

9. A complete absence of deleterious effects was noted.

Summary

The results of further study and clinical observation of the effects of ultraviolet blood irradiation therapy in 120 patients suffering from apparently intractable bronchial asthma have been tabulated. Of the 120 patients carefully followed up, 77 (64.1 per cent) were found to be relatively symptom free or definitely improved, 27 (22.5 per cent) were slightly improved and 16 (13.4 per cent) were unimproved.

Conclusion

1. A marked and relatively permanent alleviation of severe dyspnea and cyanosis plus an obvious increase in general resistance has been observed in a relatively large percentage of patients suffering from apparently intractable bronchial asthma after the application of this method.

2. Blood irradiation therapy must be repeated at intervals of two to eight weeks in cases of advanced asthmatic disease.

3. Six to ten months of treatment may be necessary before obvious improvement is noted.

4. Patients with advanced, severe, apparently intractable bronchial asthma cannot expect permanent alleviation of symptoms but often can be consistently relieved under constant treatment.

5. Patients with early, apparently intractable bronchial asthma respond more rapidly and maintain their improvement for longer periods than do those in an advanced stage.

6. The management of apparently intractable bronchial asthma requires, in addition to ultraviolet blood irradiation therapy, adherence to certain fundamental principles, e. g. elimination of predisposing aggravating influences, avoidance of instrumentation and nasal operations and temporary use of epinephrine inhalants.

7. Autumnal aggravation of asthmatic symptoms occurred in approximately 30 per cent of all patients under treatment but was purely temporary.

8. Children and young adults respond especially well to this type of therapy.

9. The Knott technic has been found to be a safe and efficient method of controlling apparently intractable bronchial asthma, with 77 of 120 patients (64.1 per cent) who received constant treatment and observation showing and maintaining definite improvement.

PREVENTIVE MEASURES IN PLASTER CAST APPLICATION

CAPTAIN ARTHUR M. PRUCE

Medical Corps, Army of the United States

World War II statistics of the United States Army and our allies indicate that approximately 70 per cent of all battle casualties have wounds of the extremities.

As physical therapy physician to a large debarkation hospital, I had an opportunity to examine hundreds of war casualties with extremities immobilized in plaster. A generally excellent plaster technic was noted.

However, from the point of view of the physical therapy physician who is called on to rehabilitate these extremities, there were certain typical deformities resulting from improper application of casts. These defects in splinting tend to exaggerate the sequelae of prolonged immobilization, namely stiff joints due to periarticular fibrosis, muscle atrophy and impaired function, factors that retard recovery and may prevent the return of otherwise healthy soldiers to full military duty. The association of an excellent anatomic reduction in plaster with a poor functional end result due to incomplete molding and trimming of the plaster over the hand or foot is to be deplored.

Upper Extremity

In the case of injuries to the upper extremities, especially septic gunshot wounds involving the long bones, mobility of the hand and fingers must be maintained. Often the surgeon tells his patient to keep the fingers moving, overlooking the fact that improper application of the cast to the hand grossly limits motion. The cast ignores the position of function and immobilizes the hand excessively. This is the result of failure to mold adequately and trim the cast to conform to the transverse palmar arch and of unnecessary splinting of the fingers in extension. It has been¹ pointed out that the line of metacarpal-phalangeal joints is not transverse to the long axis of the hand but is convex dorsally and slopes proximally toward the ulnar side. This fact is overlooked, and the little finger is fixed in hyperextension at the metacarpal-phalangeal joint, particularly in the case of gunshot wounds of the forearm and wrist, and the result is a clawed deformity.

Occasionally the thumb is immobilized in hyperextension by a wide plaster wedge between the thumb and index finger. In addition, the plaster is insufficiently trimmed back or molded over the thenar eminence. As a result there may be a residual extension deformity in the thumb due to capsule fibrosis in the carpal metacarpal joint, associated with a compensatory flexion contracture at the interphalangeal joint. The inadequate molding also limits free motion of the thumb, causing atrophy by both pressure and disuse and thereby impairing the most vital function of the thumb, opposition.

Prolonged immobilization of the fingers in extension leads to stiffening at the metacarpal-phalangeal joints and to degenerative changes in the terminal phalangeal joints, especially in patients over 30 years of age.

Sir Robert Jones,² described the position of rest for the hand at that which it assumes when it holds a large tumbler. In this position all the

1. Koch, Sumner L., and Mason, M. L.: Splinting Following Injuries of the Hand, *Surg. Gynec. & Obst.* 68:1 (Jan.) 1939.

2. Jones, Robert: *Orthopedic Surgery of Injuries*, New York, Oxford University Press, vol. 1, 1921, p. 437.

muscles of the hand are relaxed. A satisfactory cast for the hand after an injury maintains this position and at the same time extends the wrist to approximately 30 degrees. The palmar arch is supported by molding the plaster into the hollow of the hand and then trimming it back to a line which coincides with the distal and proximal creases of the palm; this allows free and complete lumbrical muscle contraction and motion of the metacarpal-phalangeal joints.

In the interspace between the thumb and the metacarpal-phalangeal joint of the index finger the width of the plaster should be kept to a structurally stable minimum to permit easy approximation of the tip of the thumb to the tip of the index finger. The palmar surface of the thumb should be freed back to the thenar crease to allow for opposition of the thumb

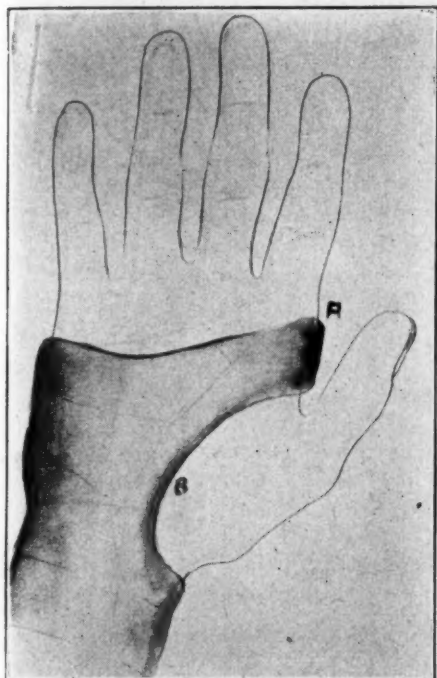


Fig. 1. — Volar view, right hand. *A*, distal edge of the cast cut back to free the distal palmar crease. *B*, thumb freed to the thenar crease.

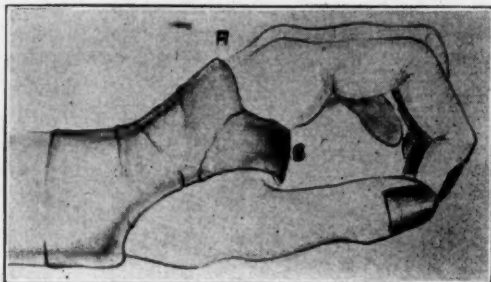


Fig. 2. — Lateral view, left hand. *A*, knuckles free. *B*, optimum width of plaster between the interspace of the thumb and the metacarpal-phalangeal joint of the index finger.

toward the tip of the fifth finger. On the back of the hand the cast should be trimmed back to free the knuckles.

Lower Extremity

In case of severe compound fractures and osteomyelitis of the bones of the lower extremities, the necessity for prolonged immobilization should be balanced by meticulous care in molding and trimming the cast to the foot.

The poor cast is applied to the sole of the foot without adequate molding of the longitudinal and metatarsal arches. The questionable technic of ending the sole of the cast at the metatarsal heads exposes the unsupported toes to the effects of gravity and the pressure of the bed clothes and can lead to clawed toes.

Impaired function of the extensor tendons is occasionally seen when an attempt has been made to secure improved position of the ankle joint after

the plaster cast has begun to set. Jordan³ stated that even continued slight pressure over these tendons just distal to the ankle joint will initiate clawing of the toes.

An isolated clawing deformity of the great toe has been observed and described by Pruce and Hagen.⁴ They reported that such a deformity is due to traction on the plaster toe-piece in the attempt to secure an improved position of the ankle joint; a bed is formed in the soft plaster under the tip of the great toe and a ridge of plaster under the interphalangeal joint. This depresses the metatarsal head, extends the metatarsal phalangeal joint and flexes the interphalangeal joint. When this malposition of the toe is fixed in place by a dorsal plaster edge that extends beyond the metatarsal-phalangeal joint, a claw toe is inevitable.

A satisfactory plaster for the foot should preserve the arches and prevent clawing of the toes. The plaster platform of the cast should be molded moderately into both longitudinal and transverse arches. The plaster toe-piece should be carried in a straight plane beyond the tips of the toes to support them in a neutral position and prevent pressure of the bed clothes.

Underneath the toes the soft plaster must be meticulously flattened to combat the tendency of the plaster to wedge under the interphalangeal joints.

Finally, the dorsal edge of the cast must be trimmed back to free the metatarsal-phalangeal joint of the great toe and to the interdigital folds of the other toes to allow for full dorsiflexion.

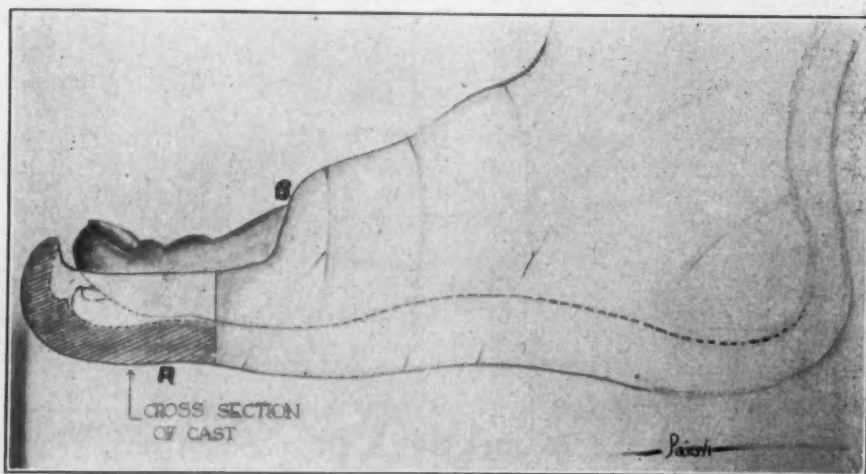


Fig. 3. — Medial view, right foot. A, plaster toe-piece smooth under the interphalangeal joint of the great toe. B, dorsal edge of the plaster trimmed back to free the metatarsal-phalangeal joint of the great toe.

Summary

1. Common errors in plaster cast application that result in deformities of the hand and foot are reviewed.
2. Preventive measures are presented.

3. Jordan, Henry H.: Personal Communication.

4. Pruce, Arthur M.; Hagen, Walter H.: Clawing of the Great Toe Following Improper Application of Plaster, J. A. M. A. 123:955 (Dec. 11) 1943.

MUSCLE AND JOINT EXAMINATION CHARTS

MAJOR SPENCER T. SNEDECOR

Medical Corps, Army of the United States

Careful surveys of the muscle function and joint action of an extremity are frequently required for proper evaluation of an orthopedic or fracture problem. They are also used both before and during physical therapy of the patients.

The three charts illustrated here were devised primarily for the use of orthopedic surgeons and physical therapists. They serve as a check outline for a diagnostic survey of the function of an extremity and likewise record its progress toward recovery. Emphasis has been placed on functional analysis: the comparison of joint range with the normal and the relationship of the principal muscle actions in carrying out the essential motions of the joint.

Chart 1 covers the joints of the upper extremity: the axiohumeral joint, the scapulohumeral joint, the elbow, the forearm and the wrist. Chart 2 covers the hand, and in this the approach is slightly different. The hand is first divided into the thumb and four fingers and their relative importance is emphasized. Then, in turn, each of the individual joints is covered. Much time and study have been spent in making a workable hand survey which can be followed out and interpreted. Chart 3 covers the joints of the lower extremity: the hip, the knee, and ankle and the foot.

These surveys are intended to be practical and to cover in simple outline form what the surgeon and the physical therapist need to know about the status of the muscle and joint action of an extremity. Also, they serve as a reliable guide to prescription of proper exercises to remedy the deficiencies discovered. The accessory and unimportant muscles are omitted for simplification. So also are the complicated coupling and coordinating forces from different positions. Duplication has been avoided whenever possible. Space has been provided for notations on three separate examinations, so that a comparative record of progress can be kept.

All fracture and orthopedic patients in the physical therapy departments under our supervision have had this type of examination performed by technicians before treatment was given. The advantages of such a procedure are easily comprehended. The exact malfunction of the extremity is diagnosed, and hasty or purposeless treatment is avoided. Moreover, it has been repeatedly proved that, for example, in every case of injured wrist the elbow should be examined and in every case of injured elbow the shoulder function should be checked. Secondary joint handicaps then are not overlooked. Furthermore, if patients are reexamined at intervals according to these outlines the success or failure of treatment will be discovered.

Standard outlines for muscle-nerve tests for paralysis should also be supplemented by these functional joint surveys to obtain a complete picture of the useful action of the limb.

Experience with these survey charts over a period of years has proved their usefulness both to the orthopedic surgeon and to the physical therapist.

MUSCLE AND JOINT EXAMINATION OF UPPER EXTREMITY:
SHOULDER, ELBOW AND WRIST

| Joint | Movement | Muscle | Nerve | Normal Range Date | Function | | | | | |
|--|---------------|---------------------------------|------------|-------------------------|----------|---|----|---|----|---|
| | | | | | R | S | R | S | R | S |
| AXIO- SCAPULA | Abduction | Trapez (Upper) | XI | 40° | Ac | P | Ac | P | Ac | P |
| | Rotation | Serratus Ant | L Thor | | | | | | | |
| | Elevation | Trapez (Upper) | XI | 2½" | | | | | | |
| | | Levator Scap | 3, 4c | | | | | | | |
| | Shrug Back | Trapez (Low) | 3, 4c | 2½" | | | | | | |
| | | Rhomboids | Scap | | | | | | | |
| | | (Anchor scapula with one hand). | | | | | | | | |
| SCAPULO- HUMERAL | Abduction | Deltoid | Circum | 180° | | | | | | |
| | | (Ant Mid Post) | | | | | | | | |
| | | Supraspinatus | Sup-scap | | | | | | | |
| | Adduction | Pector Major | A thor | | | | | | | |
| | (From 90° | Latiss Dorsi | L Sub-scap | 130° | | | | | | |
| | abduction | Teres Maj | Sub-scap | | | | | | | |
| | across chest) | Teres Min | Circum | | | | | | | |
| | Flexion | Pector Major | | | | | | | | |
| | (Forward) | Cor brach | M-C | 170° | | | | | | |
| | | Biceps | | | | | | | | |
| ELBOW | | Deltoid (Ant) | | | | | | | | |
| | Extension | Latiss Dor | | | | | | | | |
| | (Backward) | Teres Min | Sub-scap | 45° | | | | | | |
| | | Infraspin | | | | | | | | |
| | | Deltoid (Post) | | | | | | | | |
| | Internal | Pector Maj | | | | | | | | |
| | Rotation | Latiss Dor | | 25° | | | | | | |
| | | Teres Maj | | | | | | | | |
| | | Subscapul | Sub-scap | | | | | | | |
| | External | Infraspin | | | | | | | | |
| FOREARM | Flexion | Teres Min | | 25° | | | | | | |
| | | Biceps | M-C | 140° | | | | | | |
| | | Brachialis | M-S | | | | | | | |
| | | Brachio-rad | M-S | | | | | | | |
| | Extension | Triceps | M-S | To | | | | | | |
| WRIST | | Anconeus | M-S | 180° | | | | | | |
| | Pronation | Pron Teres | M | 90° | | | | | | |
| | | Pron Quad | M | | | | | | | |
| | | Flex Carpi Rad | M | | | | | | | |
| | Supination | Biceps | | 90° | | | | | | |
| WRIST | | Brachio-rad | | | | | | | | |
| | | Supinator | | | | | | | | |
| | Flexion | Palm Long | M | 70° | | | | | | |
| | | Flex Carpi Rad | M | | | | | | | |
| | | Flex Carpi Ul | U | | | | | | | |
| | | Flex Fing & | | | | | | | | |
| | | Thumb | M & U | | | | | | | |
| | Extension | Ext Carpi Rad L | R | 70° | | | | | | |
| | | Ext Carpi Rad B | R | | | | | | | |
| | | Ext Carpi Ul | R | | | | | | | |
| | | Ext Fing & | | | | | | | | |
| | | Thumb | R | | | | | | | |
| | Adduction | Ext Carpi Rad | | 40° | | | | | | |
| | (Radial) | Flex Carpi Rad | | | | | | | | |
| | | Ext of Thumb | R | | | | | | | |
| | Abduction | Ext Carpi Ul | | 40° | | | | | | |
| | (Ulnar) | Flex Carpi Ul | | | | | | | | |
| Examiner's Initials _____ | | | | | | | | | | |
| INTERPRETATION: | | | | | | | | | | |
| RECOMMENDATIONS (Include specific exercises): | | | | | | | | | | |
| Signed: _____ | | | | | | | | | | |
| Instructions and symbols: | | | | | | | | | | |
| R — Range in degrees from normal erect position measured by goniometer | | | | | | | | | | |
| or by comparison with normal opposite arm. A = Active. P = Passive. | | | | | | | | | | |
| S — Strength in terms: N — normal; G — good (against resistance) F — | | | | | | | | | | |
| fair (against gravity); P — poor (gravity eliminated); T — trace (muscle flicker | | | | | | | | | | |
| but no movement); O — zero. Or scaled likewise by comparison with normal | | | | | | | | | | |
| arm. | | | | | | | | | | |
| Check variations with red pencil. | | | | | | | | | | |

CHART 1

MUSCLE AND JOINT EXAMINATION OF THE HAND

| Movement | Joint | Muscle | Nerve | Normal Range Date | Function | | | | | |
|----------|---------------|-------------------|-------|-------------------|----------|---|----|---|----|---|
| | | | | | R | S | R | S | R | S |
| THUMB | Flexion | B Flex Brev Pol | M (U) | 20° | Ac | P | Ac | P | Ac | P |
| | | C Flex Long Pol | M | 90° | | | | | | |
| | Extension | B Exten Brev Pol | R | to 180° | | | | | | |
| | | C Ext Long Pol | R | 180° | | | | | | |
| | Abduction | A Abduct Brev Pol | M | out 70° | | | | | | |
| | | Abduct Long Pol | R | | | | | | | |
| | Adduction | A Adduct Pol | U | back 70° | | | | | | |
| FINGERS | Opposition | A Opponens Pol | M | across 45° | | | | | | |
| | Flexion | A Lumbrical | M | 90° | | | | | | |
| | | B Flex sublim | M | 110° | | | | | | |
| | 2 | (C extended) | | | | | | | | |
| | | C Flex Profund | M | 70° | | | | | | |
| | | A Lumbrical | M | | | | | | | |
| | 3 | B Flex Sublim | M | | | | | | | |
| | | C Flex Profund | M | | | | | | | |
| | | A Lumbrical | U | | | | | | | |
| | 4 | B Flex Sublim | M | | | | | | | |
| | | C Flex Profund | U | | | | | | | |
| | | A Lumbrical | U | | | | | | | |
| FINGERS | 5 | B Flex Sublim | M | | | | | | | |
| | | C Flex Profund | U | | | | | | | |
| | Extension | A Ext Com Dig | R | to 180° | | | | | | |
| | | Ext Indicis | R | ** | | | | | | |
| | 2 | B Lumbrical | M | 180° | | | | | | |
| | | C Lumbrical | M | 180° | | | | | | |
| | | A Ext Com Dig | R | | | | | | | |
| | 3 | B Lumbrical | M | | | | | | | |
| | | C Lumbrical | M | | | | | | | |
| | | A Ext Com Dig | R | | | | | | | |
| | 4 | B Lumbrical | U | | | | | | | |
| | | C Lumbrical | U | | | | | | | |
| | | A Ext Com Dig | R | | | | | | | |
| | 5 | B Lumbrical | U | | | | | | | |
| | | C Lumbrical | U | | | | | | | |
| | Abduction | 2 Dor Inteross | U | 25° | | | | | | |
| | (Away from 3) | 3 Dor Inteross | U | 25° | | | | | | |
| | | 4 Dor Inteross | U | 25° | | | | | | |
| | | 5 Dor Inteross | U | 30° | | | | | | |
| | | Abduct Min Dig | U | | | | | | | |
| | Adduction | 2 Palm Inteross | U | 25° | | | | | | |
| | (Toward 3) | 4 Palm Inteross | | | | | | | | |
| | | 5 Palm Inteross | | | | | | | | |
| | Opposition | 5 Oppon Min Dig | U | 10° | | | | | | |

** Usually 15° Hyperextension in all A joints.

UTILITY EVALUATION

Grip—Pinch—Hook

Examiner's Initials _____

INTERPRETATION:

RECOMMENDATIONS (Include specific exercises):

Signed: _____

Instructions and symbols:

- 1—Thumb (45%)
 2—Index (20%)
 3—Long (10%)
 4—Ring (10%)
 5—Little (5%)

- A—Metacarpo-Phalangeal Joint
 (Thumb = Carpo-Metacarpal)
 B—Proximal Interphalangeal Joint.
 C—Distal Interphalangeal Joint.

Ac—Active.
 P—Passive.

Check variations with red pencil.

R—Range from neutral position (thumb against index).

S—Strength, scale of six.

Or scale by comparison with normal opposite hand.

N—Normal.

P—Poor (gravity eliminated).

G—Good (against resistance).

T—Trace (muscle flicker but no movement).

F—Fair (against gravity).

O—Zero.

CHART 2

MUSCLE AND JOINT EXAMINATION OF THE LOWER EXTREMITY

| Joint | Movement | Muscle Group | Nerve | Normal Range | Function | | | | | |
|--|-----------------------|--|--|---------------------------|----------|---|----|---|----|---|
| | | | | | Date | | | | | |
| | | | | | R | S | R | S | R | S |
| | | | | | Ac | P | Ac | P | Ac | P |
| Patient anchors pelvis by holding other hip and knee in acute flexion with hands. | | | | | | | | | | |
| HIP | Flexion | Ilio-psoas Rectus Fem Sartorius | Lum Plex Fem Fem | 120° | | | | | | |
| | Extension | Glut Max Biceps Fem Semi-Tend Semi-Memb | In Glut Sc Sc Sc | 30° | | | | | | |
| | Adduction | Adductors Pectineus Glut Max Gracilis | Obt An Cru | 20° | | | | | | |
| | Abduction | Glut Med Glut Min Ten Fas Lat | Su Gl Su Gl | 50° | | | | | | |
| | Internal Rotation | Glut Med Glut Min Ten Fas Lat | | 35° | | | | | | |
| | External Rotation | Glut Max Pyriform Obturator Gemelli Quad Fem | Sa Plex Sa Plex Sa Plex 3, 4L, 1S | 40° | | | | | | |
| KNEE | Flexion | Biceps Fem Semi-Tend Semi-Memb Gastroc Popliteus | P Tib P Tib | 130° | | | | | | |
| | Extension | Quadriceps Pect Fem Vas Int, Med, Ext | | To 180° | | | | | | |
| ANKLE | Plantar Flexion | Gastroc Soleus Tibial Post Peron Long | P Tib P Tib Peron | 45° | | | | | | |
| | Dorsal Extension | Tibial Ant Ext Long Hal Ext Long Dig Peron Ter | A Tib A Tib A Tib A Tib | 20° | | | | | | |
| FOOT | Inversion & Adduction | Tibial Ant Tibial Post | | 40° | | | | | | |
| | Eversion & Abduction | Peronei Ext Dig Long | | 25° | | | | | | |
| TOES | Flexion Plantar | Abd Add Hal Flex Hal Long Flex Dig Long Flex Dig Brev | | 30° | | | | | | |
| | Extension Dorsal | Exten Hal Long Exten Dig Long Exten Dig Brev | | 60° | | | | | | |
| INTERPRETATION: | | | | Examiner's Initials _____ | | | | | | |
| RECOMMENDATIONS (Include specific exercises): | | | | | | | | | | |
| Signed: _____ | | | | | | | | | | |
| Instructions and symbols: | | | | | | | | | | |
| R — Range in degrees from normal supine position measured by goniometer or estimated by comparison with normal opposite leg. A = Active. P = Passive. | | | | | | | | | | |
| S — Strength in terms: N — normal; G — good (against resistance); F — fair (against gravity); P poor (gravity eliminated); T — trace (muscle flicker but no movement); O — zero. Or scaled likewise by comparison with normal leg. Check variations with red pencil. | | | | | | | | | | |

CHART 3

ARCHIVES of PHYSICAL MEDICINE

OFFICIAL PUBLICATION AMERICAN CONGRESS OF PHYSICAL MEDICINE

.. EDITORIALS ..

VICTORY MEETING — NEW YORK, SEPTEMBER, 1946

The 1946 Annual Meeting of the American Congress of Physical Medicine will be held at the Hotel Pennsylvania, New York from September 4 to 7, 1946 and the first announcement about it appears on the inside front cover page of the present issue of the ARCHIVES. It is being planned as a Victory Meeting, presenting the important advancements of Physical Medicine as part of the successful War Effort and as the keystone of physical rehabilitation after the War. The return, as well as the new entry of many able and enthusiastic minds into the field of physical medicine should bring forth reports on new developments through laboratory study and through clinical application. Some of these reports will also result from the gradual fulfillment of the extensive plan of combined research and instruction, inaugurated under the auspices of the Baruch Committee on Physical Medicine, the first Annual Report¹ of which has been just released. Special arrangements are being planned for the meeting to greet the Fellows of the Congress returning from War service. At the same time, all other Fellows of the Congress will rejoice over the resumption of their accustomed yearly gathering, offering so much scientific and social stimulation. Their wives and families will be undoubtedly quite happy to join, for America's first metropolis will be fully able to offer its best in theaters, shops and other matters of interest and amusement. Travel facilities and the hotel situation should be near normal by the early fall. So let us all prepare for a week's post-graduate study and postwar recreation in New York, right after Labor Day.

1. Annual Report of the Baruch Committee on Physical Medicine for the Fiscal Year, April 1, 1944 to March 31, 1945.

PSYCHOSOMATIC MEDICINE

Physical-mental relationships are receiving more attention in medicine at present than ever before. It has been demonstrated by physiologists for some time that bodily changes may be brought about by mental stimuli and by emotion just as effectively as by bacteria and toxins and that physiologic changes accompanying emotion may disturb the function of any organ in the body. Dunbar¹ quotes a leading psychiatrist on one hand and a leading internist on the other stating: The question "physical or psychic" is in most cases wrongfully put and should be replaced by the question "To what extent physical and to what extent psychic," also: We can no longer separate either "nervous or organic" or "functional or organic." Menninger² estimates that one-half and probably a larger proportion of chronically ill patients have no organic disease and asserts that the average physician is completely unequipped for the productive examination of such patients. It has become the lot of practitioners of physical medicine to treat increasingly large numbers of the chronically ill, these patients having been referred by

1. Dunbar, Flanders: Psychosomatic Diagnosis, New York, Paul Hoeber, Inc., 1943.

2. Menninger, Karl: Psychiatry in Medicine, The Internist 12:1 (Jan.) 1946.

physicians or by other patients, who were benefited by physical treatment in a similar condition. It is, of course, of pre-eminent importance to ascertain whether or not an existing disorder represents functional or visceral expression of a disturbed mind or ego. Goldberger and Goldberger³ in this issue of the ARCHIVES give a lucid interpretation of the principles of psychosomatic medicine and explain and encourage the taking of a psychosomatic history. They point out that minor psychotherapy may be skilfully harmonized with well planned physical treatment measures. Their advice coincides with the experience of many of the more seasoned practitioners of physical medicine, who have learned the "art" of medicine. It behooves all physicians in general and physical therapists in particular to become fully familiar with the established concepts of psychosomatic medicine. They should endeavor to ascertain in each particular instance the role played by the mental and emotional factors concerned. We should like to see exhaustive studies along some of these lines carried out by combined observation of psychiatrists and practitioners of physical medicine—physiatrists.

3. Goldberger, Barbara, and Goldberger, J.: Psychosomatic Concepts in Physical Medicine, Arch. Phys. Med. 27:5 (Jan.) 1946.

A. Bern Hirsh

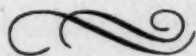
On December 21st, 1945, Dr. A. Bern Hirsh, pioneer in physical therapy, passed away at an age of 87 years. Born in Lancaster, Pa., he obtained his medical degree from Jefferson Medical College in 1882. He practiced general medicine in Philadelphia and became chief of clinic and adjunct professor of general and orthopedic surgery at the Philadelphia Polyclinic Hospital. In 1905, he established "The Weekly Roster" as a guide to Philadelphia physicians to meetings of societies and lectures in the city. Taking an early interest in physical therapy he became a member of the American Electrotherapeutic Association in 1911 and its secretary in 1920. In 1917, when World War I broke out, he was a member of a Committee of Three who waited on the Surgeon General's office requesting that physical therapy departments be established in service hospitals to duplicate the good results obtained abroad. Subsequently Dr. Frank Billings was sent abroad for further information, and the first installation was made at the Walter Reed Hospital. Shortly thereafter Dr. Hirsh became a Captain in the Medical Corps, served in the department of physical therapy at Fox Hills, Staten Island, and after the War, from 1921 to 1925 he was chief of physical and occupational therapy in District 2 of the United States Veterans' Bureau at Grand Central Palace, New York. During this period he produced a number of important papers on the employment of physical therapy on the physiotherapy clinic and in the role of technician. He continued to live in New York and although not in active practice became consultant in physical therapy at Beth Israel Hospital. In 1926 he started the "New York Medical Week," similar to the Philadelphia "Roster" and managed it for eighteen years. This paper served as the official journal of the New York County Medical Society and became so successful that in 1943 the Society took it over. During the many years of his editorship Dr. Hirsh used every opportunity to promote the cause of physical therapy by written and spoken word. He was a founder member of the New York Society of Physical Medicine and a member of the American Congress of Physical Medicine. In 1939 he was awarded the Gold Key of the Congress for his distinguished work in organization of physical therapy. On his retirement as Editor of

the Medical Week, the New York County Medical Society arranged a Testimonial Dinner on January 28th, 1943, when distinguished speakers and a large number of friends paid tribute to Dr. Hirsh's unselfish and untiring labors. His active interest in physical therapy continued until his very last days. After a serious eye operation, the last period of his life was spent in a convalescent home near New York.

Dr. Hirsh was beloved and respected by all who knew him. He was a gentleman, a scholar, a man of high intelligence and courage, and of a generous personality. He used all these splendid faculties to advance the cause of physical therapy and to encourage and assist the younger men. He was inherently modest, preferred to stay in the background and his chief satisfaction was to see the advancement and ultimate triumph of the cause of physical medicine.

List of Publications by A. B. Hirsh

1. Hirsh, A. B.: Delayed Operation in Pyosalpinx, *Times & Reg.*, Jan. 17, 1891.
2. ———: Shall We Use More Physical Measures in Our Treatment? *Penn. M. J.*, Dec., 1913.
3. ———: Splanchnic Neurasthenia and Its Treatment, *N. Y. Med. J.*, Apr. 10, 1915.
4. ———: An Advance in Treatment of Deforming Arthritis, *J. Adv. Ther.*, Nov., 1915.
5. ———: Prompt Removal of Exudate from Trauma, *N. Y. M. J.*, Feb. 10, 1917.
6. ———: Some Recent Changes in Muscle and Nerve Testing, *Am. J. Electroth. & Radiol.*, Feb., 1920.
7. ———: Diathermy in Some Bone Lesions, *Surg., Gynec. & Obst.*, Jan., 1921.
8. ———: Diathermy as an Aid in Empyema, *Am. J. Electroth. & Radiol.*, Jan., 1921.
9. ———: Physiotherapy in New York Hospitals, *Med. Rec.*, April 30, 1921.
10. ———, and Wellington, Emily: The Problem of the Physiotherapy Aide, *M. J. & M. Rec.*, July 4, 1923.
11. ———: Organizing the Physiotherapy Clinic, *Internat. Clin.*, Sept., 1924.
12. ———, and Kovács, Richard: The Physiotherapy Department and the Hospital, *Am. J. Electroth. & Radiol.* 43:399 (Nov.) 1925.
13. ———, Riviére: Originator of Surgical Diathermy, *M. J. & Rec.* 129: 681 (June 19) 1929.



MEDICAL NEWS

New Southern California Society of Physical Medicine

The first meeting of the newly organized Southern California Society of Physical Medicine was held December 17 in the headquarters of the Los Angeles County Medical Association. Dr. Fred B. Moor, well known to all Congress members and readers of the ARCHIVES becomes the first chairman; other officers, are, Irving Rehman, Ph.D., Vice-Chairman, and Clarence Dail, M.D., Secretary-Treasurer.

The program for the evening consisted of a Sound Film, "Voyage to Recovery," presented by Comdr. Edward W. Lowman, MC, USNR, and Lieut. Elberta M. Arnold, MC, USNR, Corona Naval Hospital; "Plastic Traction Splints" presented by Carl P. Jensen, MC, USNR, Naval Hospital, Long Beach, Calif.

Forty-Second Annual Congress on Medical Education and Licensure

The Council on Medical Education and Hospitals of the American Medical Association and the Federation of State Medical Boards announces the forty-second annual congress on medical education and licensure at the Palmer House, Chicago, February 11 and 12, 1946.

Changes Announced by Council

The following recommendations were passed on by the Council Medical Education and Hospitals of the American Medical Association at its meeting on December 2, 1945:

(a) Physical therapy school recommended for approval:

Baruch Center of Physical Medicine, Richmond, Va.

Note: It is understood that the entire course is operated in conjunction with the Richmond Professional Institute. Therefore, in future listings of the approved schools, both the Baruch Center and the Richmond Professional Institute will be included.

(b) It is recommended that the following schools for physical therapy technicians be removed from the approved list:

Fitzsimons General Hospital, Denver, Colo.

Walter Reed General Hospital, Washington, D. C.

Lawson General Hospital, Atlanta, Georgia.

Percy Jones General Hospital, Battle Creek, Mich.

O'Reilly General Hospital, Springfield, Mo.
Brooke General Hospital, San Antonio, Texas.
Bushnell General Hospital, Brigham, Utah.
Ashford General Hospital, White Sulphur Springs, W. Va.

Note: The above Army physical therapy schools are being discontinued with the current class and the Surgeon General's Office has requested that they be removed from the list.

(c) Recommended for removal from the approved list of physical therapy schools:

Hospital for Special Surgery, New York, N. Y.

Postgraduate Courses in Physical Medicine

New York University College of Medicine, 477 First Avenue, New York 16, at Bellevue Hospital, Spring, 1946, three months, tuition \$200.00.

University of Texas School of Medicine, 912 Avenue B, Galveston, Texas, three days, March 4, 5, and 6, 1946, tuition \$12.50.

University of Wisconsin Medical School, 418 North Randall St., Madison 6, Wis., Physical Medicine for Specialists, two to six months, tuition, \$100.00 per month.

New York Polyclinic Medical School and Hospital, 335 West 50th St., New York. One month, tuition \$100.00.

Howard Rusk Joins New York Times Staff

Dr. Howard A. Rusk, who recently resigned from the Army to serve as consultant on physical rehabilitation for the Baruch Committee on Physical Medicine, has joined the staff of the New York Times and will contribute articles dealing with every phase of the country's problems of "human reconversion." Beginning in December, Dr. Rusk will write on the needs and tasks of the thousands of service men now facing readjustment to civilian life. At a later date his articles will take up the rehabilitation of war workers and other civilians whose lives were radically affected by the war.

Dr. George New Editor

Everett M. George, M.D., recently returned from service with the United States Navy has assumed the position of Editor of the Journal of the Iowa State Medical Society. Dr. George succeeded Lee Forrest Hill, M.D., who held that position for the past nine years.

National Council on Rehabilitation

The Fourth Annual Meeting of the National Council on Rehabilitation will be held at the Ritz-Carlton Hotel in New York City on April 24 and 25, 1946.

Hearing and Speech Therapy

Warren H. Gardner, Ph.D., San Mateo, Calif., has been appointed professor of hearing and speech therapy and director of clinical services of the Cleveland Hearing and Speech Center. Dr. Gardner has been associated with the California state department of public health and has been conducting tests on school children of the state. The Cleveland Hearing and Speech Center recently was formed by the Cleveland Hearing Center and Speech Clinic at Western Reserve University School of Medicine.

General Marietta Receives Citation

Major General Norman T. Kirk, the Surgeon General of the Army, awarded the Distinguished Service Medal to Major General Shelley U. Marietta, Commanding General of Walter Reed General Hospital. General Marietta's citation stated that as Commanding General of Walter Reed Hospital as well as the Army Medical Center and as Commandant of the Medical Department Professional Service Schools from December, 1939 to August, 1945, he "displayed outstanding leadership and administrative and professional ability of a high order in discharging his highly responsible duties."

Army Releases 23 Hospitals

As of January 1, 1946, the Army released 23 hospitals out of its wartime peak of 65. These hospitals were offered to the Veterans' Administration or back to their former owners in case of leased properties.

Dean Kemp Returns to Wayne University

Dr. Hardy A. Kemp, Lt. Col., M.C., U. S. Army, Retired, has assumed his duties as dean of Wayne University College of Medicine.

Dr. Starr Becomes Dean of Pennsylvania

Dr. Isaac Starr, has been appointed dean of the University of Pennsylvania School of Medicine, to succeed Dr. William Pepper, who is now dean emeritus.

"Geriatrics" New Publication

Dr. A. E. Hedbeck has been named editor of a new bi-monthly medical journal, *Geriatrics*. It will be devoted to research and clinical reports on the processes and the diseases of the aged and aging.

Wallace Yater Resigns From Georgetown

Dr. Wallace M. Yater, formerly chairman of the Section on Experimental Medicine and Therapeutics of the American Medical Association, has resigned as professor and director of the department of medicine at Georgetown University School of Medicine, Washington. Dr. Yater, who has been editor of the *Medical Annals of the District of Columbia* since its inception in 1932, has been associated with Georgetown for many years, serving the last fifteen as professor. He is also retiring as head of the department of medicine at Georgetown University Hospital and of Gallinger Municipal Hospital.

Dr. Oppenheimer Returns to Emory

Dr. Russell Oppenheimer, who recently retired as dean of Emory University School of Medicine, Atlanta, has returned to the school after a three months leave to take over his activities as full time professor of clinical medicine.

Veterans Administration Plans for War Amputees

Services for war amputees, a subject which has come to national attention since the House Subcommittee on Aid to the Physically Handicapped disclosed the inadequate facilities currently available, was reviewed before the subcommittee again on November 20, when Major Gen. Paul R. Hawley, former chief surgeon in the European Theater of Operations and now acting surgeon general of the Veterans Administration, appeared as a witness. General Hawley presented the plans of the Veterans Administration for improving services to the boys who lost limbs in battle.

Occupational Therapy Year Book

The 1945 Occupational Therapy Yearbook, which includes information on where occupational therapy training is available; what hospital affiliations are used by training schools; what hospitals employ registered occupational therapists; what therapists are enrolled in the active register; and where to get books and supplies for occupational therapy, is now available from the American Occupational Therapy Association or your regular bookseller.

Poliomyelitis Commission Goes to Brussels

A medical commission left New York October 24 for Brussels under the auspices of the National Foundation of Infantile Paralysis to help in the epidemic of poliomyelitis in Brussels, Belgium. Members of the commission include Dr. Rustin McIntosh, director of pediatrics at Babies Hospital, New York; Dr. Charles E. Irwin, chief surgeon of the Georgia Warm Springs Foundation, and Miss Alice Lou Plastridge, chief physical therapist at Warm Springs.

New Journal

The first number of the new *Journal of the History of Medicine and Allied Science* to be published quarterly by Henry Schuman, will make its appearance in January. The journal is under the editorial guidance of a group of leading scholars in the field of medical history. Dr. George Rosen is the editor and the other members of the Board of Editors are: Dr. Erwin H. Ackerknecht, Assistant Curator of Physical Anthropology at the American Museum of Natural History; Dr. Max H. Fisch, head of the Rare Book Division of the Army Medical Library; Dr. John Fulton, Sterling Professor of Physiology at the Yale School of Medicine and Dr. Josiah C. Trent, instructor in thoracic surgery at the University of Michigan Hospital.

Announcement from Office of Vocational Rehabilitation

Numerous requests have been received for information as to the eligibility for vocational rehabilitation of otherwise eligible individuals whose vocational objective is determined to be that of home management either where recompense is direct (as in the management of the home of another) or indirect (as in the management of the disabled individual's own home). Home management, as a vocational objective, is clearly within the scope of the Federal Act and Regulations. Therefore, where a particular disabled individual satisfies all other eligibility conditions (such as the existence of a substantial employment handicap and feasibility for vocational rehabilitation), such an individual may be provided with all of those rehabilitation services found necessary and appropriate to attain the determined vocational objective of home management.

Walter Bura Appointed Head of Veterans Administration Amputee Program

Mr. Walter Bura, recently appointed consultant to the Surgeon General, and active in establishing a standardized walking training program for amputees, has been appointed head of a similar program inaugurated by the Veterans Administration.

Brigadier General Raymond W. Bliss Receives Distinguished Service Medal

Brigadier General Raymond W. Bliss, Assistant Surgeon General of the Army, has received the Distinguished Service Medal for "exceptionally meritorious conduct in the performance of outstanding service from June 29, 1943 to August 31, 1945," the office of the Surgeon General has announced.

Extend Service for Handicapped

At the suggestion of the Baruch Committee on Physical Medicine, the National Society for Crippled Children and Adults, plans to establish a central national registration and placement service for trained specialists in such work who are now in the armed forces and may want to continue their work in civilian life.

Release Criteria for Physical Therapists

- (1) Physical therapists are eligible for release from active military duty if their adjusted service rating is 25 or if they are 30 years of age to the nearest birthday or if they have performed twenty-four months of service.
- (2) Physical therapists with dependent children under 14 years of age are eligible for release from active military duty.
- (3) Physical therapists who are married are eligible for release.
- (4) Physical therapists whose physical status is LUS (limited United States Service) are eligible for release.

Nine Korean Physicians Begin Year of Training in United States

Nine physicians from Korea, recently welcomed to the United States by Major General Norman T. Kirk, the Surgeon General, and Brigadier General James S. Simmons, Chief of Preventive Medicine Service, have begun a year of study in the field of public health, sponsored by the International Health Institute of the Rockefeller Foundation.

Major General George F. Lull Gets Distinguished Service Medal

Major General George F. Lull, Deputy Surgeon General of the Army, has been awarded the Distinguished Service Medal for "exceptionally meritorious conduct in the performance of outstanding services in the office of the Surgeon General from June, 1940 to August, 1945."

General Kirk Receives Distinguished Service Medal

Major General Norman T. Kirk, Surgeon General of the Army, has been awarded the Distinguished Service Medal by General Brehon Somervell, Commanding General of the Army Service Forces, in recognition of his "outstanding leadership . . . in directing the largest Medical Department in the history of the United States Army."

O'Reilly and Fitzsimons General Hospitals Become Plastic Eye Centers

In keeping with the Army's program to establish sufficient plastic eye centers to supply the needs of patients requiring prostheses, Fitzsimons and O'Reilly General Hospitals have been added to the list of general hospital centers.

Veterans Rehabilitation Clinic of the Presbyterian Hospital

A rehabilitation clinic for veterans was opened at the Columbia-Presbyterian Medical Center, New York, to be known as the Veterans Rehabilitation Clinic of the Presbyterian Hospital.

All services will be offered to veterans free of charge. The clinic plans to treat those types of neuropsychiatric problems in which a relatively short term psychotherapeutic approach can reasonably be expected to be of decided benefit to the patient.

Consultations will be available with members of the medical staff in an effort to treat organic as well as functional diseases. Clinical psychologists will carry out various personality and aptitude studies. Occupational therapy will be directed by a therapist specially trained in rehabilitation work. Since the ultimate goal of the clinic is to help the veteran to become an active functioning member of the community once more, a committee of laymen is being formed to cooperate with the clinic in problems of employment. This committee will be made up of representatives of various types of industry and business and will work in close cooperation with the clinic.

Brigadier General William L. Hart Retires

Brigadier General William L. Hart, Surgeon of the Eighth Service Command, retired from active duty on December 31, 1945, concluding his thirty-seventh year of service with the United States Army Medical Department, the office of the Surgeon General has announced.

Veterans Administration to Assume Control of Prostheses

At a recent conference the following is one of the major points developed by Major Gen. Paul R. Hawley, acting surgeon general of the Veterans Administration:

The Veterans Administration has taken over all of the development and research work being conducted on prosthetic and sensory devices (artificial limbs, hearing aids, dentures and so on) by the Office of Scientific and Research Development. In addition, the Veterans Administration has assumed the Army's experimental work in these fields in connection with the OSRD and the National Academy of Sciences.

Colonel George W. Reyer New Commanding Officer of Beaumont General Hospital

Colonel George W. Reyer, veteran of twenty-eight years service in the Army Medical Corps, is the new Commanding Officer of Beaumont General Hospital, replacing Colonel George M. Edwards, who has retired.

Postgraduate Education in Physical Therapy in the State of New York

Announcement is made by the Council Committee on Public Health and Education of the Medical Society of the State of New York of two postgraduate courses in Physical Therapy, in the "Postgraduate Medical Education Course Outline Book, 1945-1946."

The Council Committee on Public Health and Education arranges for instruction in a wide variety of subjects. This program is made available through the combined efforts of the members of the Medical Society of the State of New York, the faculties of medical schools and research institutions, the New York State Department of Health, the Dental Society of the State of New York, the Division of Industrial Hygiene of the New York State Department of Labor and several other organizations and associations.

Physical Therapy No. 1

Arranged by Richard Kovács, M.D.

1. The Therapeutics of Heat; Medical and Surgical Diathermy; Physical Therapy in General Practice. *Richard Kovács, M.D.*, 2 East 88th Street, New York, Professor of Physical Therapy, New York Polyclinic Medical School and Hospital.

2. The Therapeutics of Massage and Exercise; Physical Therapy in Traumatic and Neurological Condition, especially Poliomyelitis. *Kristian G. Hansson, M.D.*, 525 East 68th Street, New York, Assistant Professor of Clinical Surgery (Orthopedics), Cornell University Medical College; Director, Physical Therapy, Hospital for Special Surgery and the New York Hospital.

3. Medical Electricity, Physical Therapy in Gynecology, *Richard Kovács, M.D.*

4. The Therapeutics of Water and Light; Physical Therapy in Medical Conditions. *William Bierman, M.D.*, 471 Park Avenue, New York, Associate in Medicine, College of Physicians and Surgeons, Columbia University; Attending Physical Therapist, Mt. Sinai Hospital.

A lecture may be arranged for a single session or as a part of other formal courses.

Physical Therapy No. 2

Arranged and Given by Richard Kovács, M.D.

1. Electricity in Medicine.

2. Light, Water and Exercise.

3. Physical Therapy in Medical Conditions.

4. Physical Therapy in War and Rehabilitation.

Doctor Kovács in the above four lectures presents a brief review of the subject of physical therapy from the standpoint of the usefulness of physical therapy to the general physician. This course is to be recommended to county medical societies where instruction in the fundamentals of this specialty is desired. These lectures are available for special single sessions or as a part of other formal courses.

BOOK REVIEWS

CLINICAL NEUROLOGY: By *Bernard J. Alpers*, M.D., Sc.D., (Med.) Professor of Neurology, Jefferson Medical College, Philadelphia; Neurologist, Jefferson, Pennsylvania and Wills Hospitals, Philadelphia. Cloth. Price, \$8.00. Pp. 808 with 232 illustrations and 58 tables. Philadelphia: F. A. Davis Co., 1945.

The preface states: "The primary purpose of this book has been to present the subject of neurology in such a manner as to make it intelligible to medical students and general practitioners." The author is to be congratulated on the degree to which he has fulfilled his purpose.

The volume begins, interestingly enough with descriptions of the examination of the neurologic symptoms and signs and the topical diagnosis of nervous diseases. Alpers next considers among the many symptoms which may develop in neurologic disorders the following which are often most baffling to the general practitioner: headache; vertigo, coma and pain. He shows how to analyze these symptoms satisfactorily. Next is given a concise and detailed account of all the neurologic conditions encountered in practice. The descriptions of the disease are inclusive. The diagnosis of the condition is given in detail and fifty-eight tables of differential diagnosis help in the orientation. Equally important are the sections devoted to therapy. In these sections physical therapy is usually evaluated. The book is replete with clear, interesting and important illustrations printed on excellent paper. The type is clear and easy on the eye. To attempt to evaluate neurology and to present to the medical student and to the general practitioner the essence of the subject is by no means easy. The author has done so by concreteness, simplification, the removal of the redundant and the elaboration of the complex material in terms that can be understood by the average medical man. The book can be highly recommended as one especially suited to the general practitioner.

THE AUTONOMIC NERVOUS SYSTEM. By *Albert Kuntz*, Ph.D., M.D., Professor of Micro-anatomy in St. Louis University School of Medicine. Third edition. Cloth. Pp. 687, illustrated with 91 engravings. Price, \$8.50. Philadelphia: Lea & Febiger, 1945.

The growing interest and knowledge of the autonomic nervous system makes the new edition of this text timely. There has been adequate revision and inclusion of recent experimental data and clinical information on surgical procedures which are becoming increasingly popular. The first six chapters deal with the gross and microscopic anatomy and general physiology in relation to metabolic and endocrine functions. Sep-

arate chapters are then devoted to innervation of the individual organs with discussion of the normal physiology. The concluding five chapters describe the role of the autonomic nervous system in disease in a thorough and systematic fashion. The illustrations are satisfactory, although not as profuse as might be desired by the surgeon. There is an excellent and large bibliography. This textbook is highly recommended.

STUDENT'S GUIDE IN NURSING ARTS. By *M. Esther McClain*, R.N., B.S., M.S., Assistant Professor in Nursing Education, Instructor in Nursing Arts of the Providence Division of the School of Nursing Education, Catholic University of America, Washington, D. C.; formerly Instructor of Nursing Arts, St. Vincent Hospital, Indianapolis. Cloth. Pp. 407. Price, \$3.00. St. Louis: C. V. Mosby Co., 1945.

This appears to be an excellent guide to supplement a nursing text or intensive nursing course. The outline assists the student to see the patient as a whole and covers the wide scope of nursing care. The objectives are clearly stated and well chosen references are given. The construction is commendable as it allows for easy handling. Space is provided for insertion of personal notes by the students and the quiz pages may be easily removed and reinserted. This should result in economy of time and effort during the course and allow a close checkup on completion of the student's work. The quiz statements are complete and pertinent to the subject. There is little doubt that the author has compiled a guide to supplement the nursing arts course which is well integrated with the Nursing League Curriculum as a whole, and accomplishes the author's stated purpose: "to make the course in nursing arts more concise, interesting, and emphasize its most important nursing aspects."

A SYNOPSIS OF MEDICINE. By *Sir Henry Letheby Tidy*, K.B.E., M.A., M.D., B.Ch. (Oxon.), F.R.C.P. (Lond.) Extra Physician to H. M. the King; Consulting Physician to St. Thomas' Hospital; Hon. Major General, lately Consulting Physician to the British Army. Eighth edition, revised and enlarged. Cloth. Pp. 1215. Price, \$7.50. Baltimore: The Williams & Wilkins Company, 1945.

This might be described as a little, big book as there is a little bit about a great many diseases and, although each page is small, there are over 1200 of them. The subject matter is presented in outline form. For each disease there are listings of etiology, pathology, symptomatology, bacteriologic, laboratory and x-ray findings, important differential diagnoses, treatment and prognosis. Those familiar with previous editions will find

that revision includes the use of sulphonamides, but not penicillin. Many sections have been rewritten in the light of recent discoveries, for example, the Rh factor in blood, so that this edition keeps pace reasonably well with advances in medical knowledge.

The author has achieved his aim of writing a book of assistance to those who have to revise rapidly their knowledge of medicine in general or of some disease in particular; to the worried student whose final examinations are within sight, and to the hurried practitioner; possibly also to the teacher with a lecture to prepare. All the essential details of medicine are presented and well indexed.

JURISPRUDENCE FOR NURSES: LEGAL KNOWLEDGE BEARING UPON ACTS AND RELATIONSHIPS INVOLVED IN THE PRACTICE OF NURSING. By *Carl Scheffel*, Ph.B., M.D., LL.B., in collaboration with *Eleanor McGarrah*, R. N. Third edition. Cloth. Price, \$3.00. Pp. 264. New York: Lakeside Publishing Company, 1945.

This volume is written by well qualified authors. Carl Scheffel is a member of the American College of Medical Lawyers and Eleanor McGarrah is a member of the Michigan Bar Association. That the book is in its third revision indicates, the increasing interest and value not only to the nursing profession but to physicians. The medical profession in general is not cognizant of the extreme importance of medico-legal information not only as it applies to the physician, but as it applies to the public. A physician ordinarily does not become medico-legal minded until he is faced with a court summons or possibly a judgment. In the State of California, for instance, it is estimated that one physician out of every fifteen has or will have legal action brought against him which often will result in a judgment in favor of the plaintiff. There are few state, or local county medical societies that do not have a medico-legal service for its members. The book is well written and is easy to understand. The arrangement of the subject matter makes it available for ready reference. The citation of various cases adds to its interest and value. The questions which are listed at the end of each chapter are instructive. Those who think they are versed in medico-legal procedure should read and attempt to answer some of these questions. In the appendices are listed by states the requirements of the different examining boards for nurses, when examinations are given, the fees that are charged, how application should be made and what reciprocities are with other states. A publication of this kind can do much to create a better understanding between the courts and the members of the medical profession, especially the nursing profession. The present volume is as up to date as possible with condition of changing laws and court decisions. It is hoped that training schools for nurses will use this as a textbook. It should be in every medical library as well as in every modern training school for nurses.

THE JOHN CRERAR LIBRARY, 1895-1944: AN HISTORICAL REPORT PREPARED UNDER THE AUTHORITY OF THE BOARD OF DIRECTORS. By the Librarian (*J. Christian Bay*). Paper. Pp. 213, with 9 illustrations. Chicago, 1945.

This book is of general as well as medical interest. The biography of Mr. John Crerar as well as others who had a part in the building of this institution are included. It is interesting to note that the library emphatically does not "circulate" its books, except by way of inter-library loans. At present this library serves more than four hundred libraries all over this country and Canada, including Government departments, offices, laboratories, camps, etc., industrial organizations, hospitals, clinics, medical and scientific societies, so that in this respect their service may truly be said to be national in scope.

ESSENTIALS OF NEURO-PSYCHIATRY, A TEXTBOOK OF NERVOUS AND MENTAL DISORDERS. By *David M. Olkon*, S.B., A.M., M.D., Associate Professor of Psychiatry, College of Medicine, University of Illinois. Cloth. Price, \$4.50. Pp. 310 illustrated with 138 engravings. Philadelphia: Lea & Febiger, 1945.

The author purposes in this book to cover the basic features of the fields of neurology, psychiatry and endocrinology. His emphasis is at times difficult to understand except as a manifestation of his personal interests. He devotes thirty pages to capillary changes in disease and dismisses psychotherapy in a page and a half, and under the heading "psychotherapy" discusses socialization and changes in the patient's wearing apparel. Again, he devotes six pages to a discussion of transvestitism and dismisses homosexuality in seven lines with the summary. "Homosexuality is rather widespread and in some countries laws have been enacted against it." "Basedow's disease" is given as synonymous with "thyrogenic psychosis." In the illustrations emphasis is placed on patients with major hysteria and on long-time inhabitants of state hospitals. The psychiatric viewpoint cannot be said to be dynamic in any modern sense. Perhaps the condensation of modern neuropsychiatry into three hundred pages is an overly ambitious undertaking.

NEW GOALS FOR OLD AGE. Edited by *George Lawton*, Director of Old Age Counseling Center, New York City. Cloth. Pp. 210. Price, \$2.75. New York: Columbia University Press, 1945.

This book, which contains a collection of papers delivered originally in a course "Mental Health in Old Age," conducted under the auspices of the Section on the Care of the Aged of the Welfare Council of New York City, is an interesting and valuable contribution to the study of geriatrics. As editor, Lawton points out in the prologue that, "While medical science is making it easier for people to grow old, the cultural pattern is making it more difficult." The authors

of the various sections, fourteen experts on various phases of the problem of old age, suggest methods of overcoming the difficulties.

The topics discussed are as follows: "Adjustment Over the Lifespan," by Lawson G. Lowrey; "Aging Mental Abilities and Their Preservation," by George Lawton; "The Older Person in the Changing Social Scene," by Lawrence A. Frank; "The Older Person in the World of Today—in the Family," by Ollie A. Randall; "Physical Changes in Old Age and Their Effects Upon Mental Attitudes," by Lewellys F. Barker; "Applying Mental Health Principles to Problems of the Aging," by Nolan D. C. Lewis; "Work Therapy, Interests, and Activities," by Edward Hochhauser; "Toward a Science of Bibliotherapy," by Alice I. Bryan; "Occupational Therapy," by Marguerite Emery; "The Creative Urge in Older People," by Edward T. Hall; "Mental Diseases of the Aged," by Samuel W. Hartwell; "Old Age at the Crossroads; Patterns of Living: In an Institution," by Helen Hardy Brunot; "Old Age at the Crossroads; Patterns of Living: In the Community," by Ruth Hill; "Old Age, First Person Singular," by George Lawton; "How It Feels to Be Seventy-five and a Woman."

The last chapter, which is anonymous, is of particular interest. In telling how it feels to be 75 and a woman, the anonymous author presents a charming and encouraging picture.

Every physician who is interested in problems of geriatrics, as well as every psychiatrist and social worker who deals with problems of the aged and, in fact, every old person, could profit by reading this interesting collection of papers.

THE EXTREMITIES: By Daniel P. Quiring, Ph.D., Head of the Anatomy Division, Cleveland Clinic Foundation and Associate Professor of Biology, Western Reserve University; Beatrice A. Boyle, Artist, Cleveland Clinic Foundation; Erna L. Boroush, M.A., Fellow, Anatomy Division, Cleveland Clinic Foundation and Bernadine Lufkin, A.B., Former Secretary, Research Division, Cleveland Clinic Foundation. Cloth. Price, \$2.75. Pp. 117 with 106 illustrations. Philadelphia: Lea & Febiger, 1945.

The diagrams in this book make clear to the student of anatomy, the origin, insertion, motor points, action, arterial and nerve supply of the muscles of the upper extremities. The plates are of aid to the student because they do not attempt to show all details of attachments, nerves and arteries, but they do emphasize the major termini of muscles and the chief arteries and nerves related to them. Likewise, in the legends are stressed the primary functions of muscles which imply movement at the insertions. The motor points were tested on normal subjects but diagrams can only give the approximate location of greatest muscular response. Text reference for motor points are Tinel: "Nerve Wounds" and Kovács, "Electrotherapy and Light Therapy." Motor points are not included for muscles which do not show a clearcut response to electrical

stimulus. The diagrams are based on original dissections but references are given to anatomical texts as Gray's "Anatomy," edition 24, and Cunningham's "Text-Book of Anatomy," edition 7. This book can be highly recommended to students of physical therapy and to physical therapy technicians.

FLUORO-CHEMISTRY. A COMPREHENSIVE STUDY EMBRACING THE THEORY AND APPLICATIONS OF LUMINESCENCE AND RADIATION IN PHYSICO-CHEMICAL SCIENCE. By Jack De Mott, Research Chemist, Associate Editor, Mineralogist Magazine; Head, Fluorescence Laboratories; Fellow, The Chemical Society of London. Pp. 796. Cloth. Price, \$14.50. Brooklyn: New York Chemical Publishing Co., Inc., 1945.

Luminescence is defined as the emission of light and according to this volume, there are two kinds of luminescence. One is *candoluminescence* or *thermal luminescence*, resulting from temperatures roughly in excess of 1000 C.; it is illustrated by the emission of light from an incandescent bulb; the other is *fluorescence*, virtually a cold process, occurring below temperatures of about 1000 C., *nonthermal luminescence*. Fluorescence includes transient emission of light which lasts, to the unaided eye at least, for only an instant; it also embraces *phosphorescence*; light emission which takes place in a recognizable period. Both forms of luminescence are manifestations of the same fundamental phenomenon, the excitation of the atom or molecule. The author has been identified with much of the newer research of fluorescence and its applications to chemistry. His volume embraces the theory, as well as the industrial, scientific and other applications of fluorescence, luminescence and other radiation. It not only gives definitions of the basic concepts of fluorochemistry, but explains in full detail its phenomena and applications. It describes methods for the preparation of the various luminescent organic substances; dyestuffs and coloring matters, ultraviolet-emitting inorganic and organic substances and gives qualitative and quantitative tests for their identification. Many of the biologic and therapeutic implications of fluorochemistry are presented in the sections on "emission of infrared radiation by living tissue" (*infrabioluminescence*) "radiations emitted in the course of the oxidation of various protoplasmic substances" (*infrachemiluminescence*), "fluorosensitized biological processes" (*photodynamic effects*—diseases caused by light, action of sensitizers). The chapter on *fluorobiology*, the companion science of fluorochemistry, contains sections on the biological utility of *ultraluminescence*, the fluorochemistry of carcinogenic agents, *ultraluminescing substances* and cancer therapy, also on the fluorochemistry of cholesterol. All this makes it evident that *fluorobiology* has many actual relations to medicine in general and physical medicine in particular; also that many

more newer developments may be possible. Throughout the volume the experimental results of fluorochemistry are presented in the hope that their examination and comparison with the results of investigators in other specialized fields of chemical physics will widen the views on the science of fluorochemistry. As a whole, the book is highly technical and contains many useful tables and bibliography, which have been alphabetically arranged for quick reference. It is illustrated by 30 comprehensive graphs.

THE FALLING SICKNESS: A HISTORY OF EPILEPSY FROM THE GREEKS TO THE BEGINNINGS OF MODERN NEUROLOGY. By *Oswei Temkin*, M.D., Associate Professor of the History of Medicine at the Johns Hopkins University, Baltimore, Md. Publications of the Institute of the History of Medicine, The Johns Hopkins University, First Series: Monographs, Volume IV. Cloth. Price, \$4.00. Pp. 380, with 7 illustrations. Baltimore: Johns Hopkins Press, 1945.

This volume is another one of the splendid historical monographs issued under the auspices of the Institute of the History of Medicine at Johns Hopkins University. Its author states that a history of epilepsy seems a premature, perhaps even a doubtful enterprise. There is no unanimity about the range of the concept of epilepsy, and the nature of the disease is as yet obscure, and therefore a history of epilepsy cannot be written in the manner in which, for instance, a history of tuberculosis might be approached. Oliver Wendell Holmes once said: "If I wished to show a student the difficulties of getting at truth from medical experience, I would give him the history of epilepsy to read." Dr. Temkin has written such a history from a cultural point of view, quoting opinions of laymen, philosophers and theologians, as well as those of physicians. The book begins with the ancient Greeks who have left us the earliest western writings on epilepsy, and it continues to the point where the historical perspective ends and the present debate begins; thus the history of epilepsy becomes an example of the history of magic beliefs and of their refutation by scientists and scientific physicians. In the section on "Antiquity" we see how diseases can be considered as invasions by gods, demons or evil spirits and treated by invocation of supposedly supernatural powers. The magic conception according to which epilepsy was a contagious disease was one of the factors which made the epileptic's life miserable and gave him a social stigma. The Greek physicians approached the treatment of epilepsy without undue illusions. Even the most optimistic, among them, like the author of "On the Sacred Disease" acknowledged inveterate cases as incurable. In the writings of

the ancient physicians the treatment of epilepsy by a dietetic regimen, including the regulation of exercise, sleep, evacuations, etc., always plays an important role. During the long transition from antiquity to the middle ages, the confusion of epilepsy with other psychic disorders became marked. The means which medieval men used in fighting epilepsy were rational and superstitious on the one hand, magic and religious on the other. The rational cure made use of diet and drugs, following the tradition of ancient rational treatment. Other remedies and procedures, such as observation of the phases of the moon, the use of human blood and bones, of amulets, of plants and precious stones, etc., are superstitious from our point of view. With the spread of Christianity people began to expect help from saints and relics. Early ecclesiastic writers report miraculous cures of epilepsy wrought by holy men themselves or at their shrines. The section on "Renaissance and the Great Systems" and the "Period of Enlightenment" report the theological debate on possession and witchcraft and the considerable broadening of the clinical knowledge of epilepsy. In the nineteenth century finally came the humanization of the treatment of the insane, benefitting the epileptics who were usually kept together with the insane. Soon they were confined in separate wards, clinical studies were conducted and as a result of these advances, first Hughlings Jackson was enabled to evolve the neurologic theory of epilepsy and later, Charcot separated epilepsy and hysteria. About 1880 the term "falling sickness" came to termination and here is where the author's intensely interesting discussion also stops, leaving the presentation of the sixty years of progress since to some future author. A bibliography of 706 titles, an extensive index on personal names as well as on subjects add further to the comprehensiveness of this splendid volume.

THE STORY OF A COUNTRY MEDICAL COLLEGE. A HISTORY OF THE CLINICAL SCHOOL OF MEDICINE AND THE VERMONT MEDICAL COLLEGE. Woodstock, Vermont. 1827-1856. By *Frederick Clayton Waite*. Cloth. Pp. 213, with 9 illustrations. Price, \$4.50. Montpelier: Vermont Historical Society, 1945.

This small book is a scholarly one based on painstaking historical research. It should be interesting reading for any physician concerned with medical education, particularly in New England. This is the first detailed history of any country medical college to be published and is of significance because these colleges were an important feature of medical education in the middle of the nineteenth century. An appendix of sixty pages contains a listing of the officers of the institution and all graduates and non-graduates with brief biographical notes.

LABORATORY MANUAL FOR ELEMENTARY PHYSIOLOGY. By *Lelia V. Walling*, Assistant Professor and *Kenneth Siler*, Formerly Instructor, University of Kansas. Loose-Leaf Binding. Price, \$1.50. Pp. 187. Fourth Edition. St. Louis: The C. V. Mosby Company, 1945.

Because of the modern binding, the pages may easily be removed and re-inserted. The experiments included in this manual of laboratory exercises are planned to demonstrate the simpler, fundamental reactions of the living organism and the protoplasm of which the organism is composed. Spaces are provided for written answers to all of the questions; for drawings and for kymograph tracings. While it is in no sense of the term exhaustive it can be recommended as an excellent laboratory manual for students of elementary physiology.

A SURGEON LOOKS AT LIFE. By *Richard A. Leonardo*, M.D., Ch.M., F.I.C.S. Cloth. Price, \$2.00. Pp. 128. New York: Froben Press, 1945.

Dr. Leonardo's prolific pen has turned out for several years in succession volumes on medical history and travel. In this, his latest book, he ventures into a presentation of sociophilosophic problems closely related to medicine. Beginning with a chapter on "Churchman and Doctor," there are chapters on Faith cures; Psychological

medicine; Birth control; The Right of life; Sterilization; Euthanasia; The Right to die; Heredity and environment; Juvenile delinquency; Gerontology and Geriatrics; Life after death; Building a good life. The author's attitude in many of these perplexing problems is quite idealistic and unsophisticated; his elaborations abound in historical references. Laymen and physicians alike will find much of interest in Leonardo's latest volume.

HUMAN BIOCHEMISTRY. By *Israel S. Kleiner*, Ph.D., Professor of Biochemistry and Physiology, New York Medical College, Flower and Fifth Avenue Hospitals; Formerly Associate, The Rockefeller Institute for Medical Research, New York. Cloth. Pp. 573, with 70 text illustrations and 5 color plates. Price, \$6.00. St. Louis: The C. V. Mosby Company, 1945.

This book attempts to cut short and make more popular the study of biochemistry for medical and dental students. To this end many references to clinical conditions are included and a few excellent colored photographs of commercial source. The basic facts of biochemistry are not well or completely described and the references are scanty. This is not recommended as a reference source, and is recommended with some question as an adequate textbook for medical students. It is suitable for dental students.

Turn to page 62 for announcement of course
in Physical Medicine, Galveston, Texas,
March 4, 5, 6 and 7.

Watch February and March issues of
ARCHIVES for details of meeting of Eastern
Section of Congress in Washington, D. C.,
Saturday, April 13, 1946.

PHYSICAL MEDICINE ABSTRACTS

Arthritis and Chronic Rheumatism. Douglas H. Collins.

Practitioner 155:299 (Nov.) 1945.

To help in planning treatment, four common etiologic types of fibrosis are discussed.

The first is toxic, myalgia associated with, or immediately following, various systemic intoxications or infections; mechanical, related to acute or repeated strains of ligaments and muscle insertions; postural, muscle spasm resulting from injury or disease of joints or from developmental or occupational deformities and psychogenic. Diagnosis is facilitated by recognizing such points as gross incongruity of symptoms with structural changes, persistence of disability bizarre posture and associated hysterical manifestations. Vague shifting pains suggest an underlying emotional disorder, while strictly localized pain points to the presence of organic changes.

Copeman and Ackerman offer an anatomical explanation of that further form of fibrositis associated with tender, palpable nodules. These nodules are apparently vascular, fatty structures liable to edema and congestion, in which state they may impede the smooth working of muscles and tendons in their fibrous envelopes or even herniate through foramina in the fascial investments.

Therapeutic infiltration of a local anesthetic is an established procedure when pain is referred to accessible tender spots, but good results are not constant.

Success in treating fibrositis requires a careful consideration of all possible factors. The use of vigorous massage and physical therapy undoubtedly relieve many early and acute conditions. In chronic states, search must be made for underlying causes and treatment directed appropriately. The war has vastly increased the appreciation of psychosomatic medicine.

The Physical Basis of Radiant Heat Therapy. David S. Evans, and K. Mendelssohn.

Proc. Roy. Soc. Med. 38:586 (Aug.) 1945.

In clinical usage the term "radiant heat" usually refers to radiation in the red end of the visible spectrum (0.65 μ — 0.73 μ) together with the invisible infra-red rays (0.73 μ — 10 μ). As a physical phenomenon infra-red radiation is distinguished from x-rays, ultraviolet rays and visible light only by its greater wavelength. All these radiations are electromagnetic waves and represent a flow of energy emanating from the radiation source. The intensity of such radiation is determined by the quantity of heat developed in a body (known as a black body) which absorbs

all the radiation falling on it.

Infra-red radiation has no specific action on the tissues; its therapeutic value is due to the fact that it supplies them with energy in the form of heat.

An analysis of the physical factors involved shows that sources of infra-red particularly those emitting long-wave radiation, have to be of considerable area, which, in many cases, makes the technic of beam therapy inapplicable. This, together with the problem presented by secondary radiation, makes computation of dosage difficult, and treatment should, therefore, be based on the measurement of radiation flux incident in the skin of the patient. A suitable instrument for clinical use is described.

The effect of interposing various materials in reducing the incident radiation has been investigated, and it has been found that shorter wavelengths have, in general, a slightly higher penetrating power. The effect of heat conduction through the air, incidental to radiant heat treatment, on the total heat supplied to the patient, is discussed. A rough survey of the physical factors governing heat removal from the tissues shows that treatment by infra-red can never remain purely local.

Electroconvulsive Therapy of Acute Hysteria. Fred Feldman; Samuel Susselman; Basile Lipetz, and S. Eugene Barrera.

J. Nerv. & Ment. Dis. 102:500 (Nov.) 1945.

Shock therapy has been utilized in the treatment of almost every form of mental disorder, including the psychoneuroses. Published results of the treatment of the psychoneuroses by this means have been meager and disappointing, and insufficient data have as yet emerged to indicate the direction or magnitude of change. For the most part, treatment has been confined to anxiety neuroses and obsessive compulsive states.

Two cases of acute hysteria, one displaying paralysis and the other amnesia, have been treated by means of electric shock as one phase of therapy, with relief of presenting symptoms.

Peripheral Neuritis. John B. Tredway.

Bull. Johns Hopkins Hosp. 77:101 (Aug.) 1945.

Twenty cases of peripheral neuritis were observed in which all of the patients had been on tropical duty and in eight of which the onset was related to an attack of malarial fever. The common peroneal nerve was involved in sixteen, the axillary nerve in three, and the radial nerve in one. Electromyograms were made in response

to maximal stimulation of the motor nerve in six cases with involvement of the peroneal nerve. The loss of function indicated by the reduced voltage of the muscle action potential is a result of lesions of the nerve fibers only while neuromuscular transmission and muscle conduction is normal. The recovery curve was followed in several cases by recording the action potentials at frequent intervals. Atabrine and quinine had no influence on the degree or rapidity of the recovery in these patients. In all cases with peroneal nerve paralysis the prognosis was good. Treatment consisted of proper support of the involved muscles, graded exercises under supervision of trained physical therapy technicians and a balanced diet supplemented by vitamins of the B complex.

Control of Air Borne Infection.

J. A. M. A. 129:553 (Oct. 20) 1945.

The bacteriologic studies carried out by Deryl Hart and his co-workers established that air is an important source of contamination in every operative wound. They also demonstrated that sterilization of the air in the operating room can be accomplished by ultraviolet irradiation. Robertson and her associates obtained a striking reduction in cross infection in infant wards by ultraviolet irradiation. Wheeler and his associates describe a carefully controlled clinical study of the effect of the ultraviolet light control of air borne infections in a naval training center. Ultraviolet irradiation of the floors and upper air of barracks housing naval recruits was accompanied by a 25 per cent reduction of respiratory illness in those barracks equipped with high intensity sources as compared with illness in the adjacent control barracks. This fact was most noticeable in the early winter months, when illness rates were at a general high level throughout the camp. At this time the reduction of incidence in barracks irradiated with high intensity sources as compared to the controls was approximately 35 per cent.

Metatarsal March (Fatigue) Fractures. Albert L. Leveton.

Am. J. Surg. 70:57 (Oct.) 1945.

A number of my patients were allowed weight bearing on the heel after the pain and the swelling had subsided, in seven to ten days. There is no appreciable difference in the amount of callus formation at the fracture site in patients who are kept at bed rest for the entire period of three weeks or when early heel weight-bearing is permitted. Metatarsal march fractures is primarily an occupational disease of soldiers. March fractures are more properly termed fatigue fractures. There is no basis for the belief, as some authors have indicated, that metatarsal march fractures are due to spasm and overactivity of the interossei muscles.

The Effect of Artificially Induced Fever on Humoral Antibodies and on Histamine Intoxication in the Guinea Pig. R. Y. Gottschall; D. Laurent, and P. deKruif; W. M. Simpson; H. W. Kendell, and D. L. Rose.

J. Lab. & Clin. Med. 30:576 (July) 1945.

An artificially induced fever temperature of 42.2 C. maintained for thirty minutes has no effect on the humoral precipitin titer of guinea pigs immunized against horse serum. The antiprotein titer of sensitized guinea pigs is not significantly altered by a fever temperature of 42.2 C. maintained for sixty minutes when the serum is titrated by a modified Prausnitz-Kustner reaction. A fever temperature of 42.2 C. maintained for thirty minutes suppresses histamine shock.

In vitro tests with surviving normal intestine exposed to histamine indicate that there is less contraction at 43.3, 45.0, or 46.0 C. than at 38.8 or 39.0 C. Response of sensitized intestine to the specific antigen (ovalbumin) is also decreased by temperatures of 43.3, 45.0, or 46.0 C.

The immediate type of reaction in the guinea pig's skin is suppressed by a fever temperature of 42.2 C. maintained for sixty minutes when the locally sensitized tissue is injected with the specific antigen during hyperpyrexia.

Electrodiagnosis by Means of Progressive Currents of Long Duration. Studies on Peripheral Nerve Injuries in Man. Lewis J. Pollock; James G. Goseth; Alex. J. Arieff, and Frank Mayfield.

Surg., Gynec. & Obst. 81:200 (Aug.) 1945.

The characteristics of responses to progressive currents of long duration degeneration, denervation, and regeneration are described. The usefulness of the computation of a ratio for currents of long duration is pointed out. The characteristics of the state of denervation as described are unique for that condition and consist of a minimal threshold amperage for contraction and unity of ratio for stimuli by progressive currents of long duration. A high ratio or a high threshold amperage are indicative of regeneration. A high ratio and only a moderately high threshold amperage are characteristics of the degenerating state. The validity of this method of examination for the diagnosis and prognosis of peripheral nerve lesions in man was established by the examination of 52 patients suffering from peripheral nerve lesions. In only 2 cases was there any question of its accuracy, and for these 2 a possible explanation is made.

On "Acroparaesthesia" and So-Called "Neuritis" of the Hands and Arms in Women. F. M. R. Walshe.

Brit. M. J. 4426:597 (Nov. 3) 1945.

During the past four years the author has seen a number of cases in which the presenting symptoms were numbness, tingling, and "uselessness" of the hands and fingers in women, often asso-

ciated with severe pain and a variable degree of disability.

If it is a mechanically produced "neuritis" of components of the brachial plexus, sometimes with an associated minimal interference with the blood supply to the upper limb, it might be expected that rest, either rest in bed or the simple cessation of manual work, would produce appreciable relief and final disappearance of symptoms. It is suggested that rest is the only effective treatment. The majority of the patients were given prolonged dosage with synthetic vitamin B₁, as well as various forms of physical therapy. When these procedures were not accompanied by rest they were futile.

In the most severe cases an initial period of a week in bed, propped up during the day, with the arms in slings and taken out only for feeding and other necessary purposes, was the most effective way of securing relief from pain; thereafter a longer period of abstention from heavy housework, and the supporting of the arms in slings whenever possible while the patient is standing or walking. During this second period massage to the shoulder girdles and general tonic treatment tended to prevent recurrence.

Bicipital Tendovaginitis. I. W. Kaplan, and B. L. Hawkins.

Am. J. Surg. 70:385 (Dec.) 1945.

Bicipital tendovaginitis in young male adults engaged in strenuous activities is a relatively common condition and deserves more consideration in the differential diagnosis in the clinical entity that has become designated as the "painful shoulder syndrome." Trauma and infection are mentioned as possible etiologic factors. The right shoulder is most commonly affected in right-handed persons suggesting that the additional trauma of use may be a factor in the etiology. The average age in the group of cases was thirty years. Infiltration therapy has given excellent results in the series of cases presented. Treatment is accompanied by relief of pain and restoration of a full range of motion at the shoulder joint.

Refrigeration Anesthesia. H. Ogle Horner.

Am. J. Surg. 70:211 (Nov.) 1945.

The use of refrigeration anesthesia for major amputations of the limbs is a sound surgical procedure. It is applicable in particular to the poor risk patient since there is scarcely any shock accompanying the procedure. It is possible to perform major amputations safely with this form of anesthesia in what formerly were hopeless cases because of debility or septicemia. It lowers the incidence of stump infections in those patients requiring amputation because of infection.

Pain is relieved in most instances after the application of cold, thus adding to the ease and comfort of the patient as well as facilitating preoperative preparation. The postoperative period is likewise free from pain, and the patient may carry on without missing a meal. This is espe-

cially important in diabetics as the diet and insulin do not have to be changed.

There is ease and quickness of operation in these cases. Poorly nourished tissues may be saved although refrigeration will not restore devitalized tissue. Edema and drainage may be controlled postoperatively when necessary. There is also a reduction in the incidence of thrombosis and embolism. This method of anesthesia is also valuable in severe crushing wounds of the extremities or other injuries that require amputation. This form of refrigeration is not intended to supersede other forms of anesthesia when the general condition of the patient is good, but is a valuable adjunct in the treatment of the poor risk patient.

Electromyographic Studies in Poliomyelitis. Paul M. Kohn; Edward M. Zucker, and John A. Toomey.

J. Nerv. & Ment. Dis. 102:438 (Nov.) 1945.

Paralyzed and paralyzed muscles involved in poliomyelitis infrequently show electromyographic evidence of spasm while at rest. A small percentage of such muscles show constant potential discharges when stretched. Intermittent discharges are found more frequently. Evidence of disorganization of the neuromuscular mechanism as manifested by disordered reciprocal and crossed innervation is a common finding.

Internal Derangements of the Knee—Diagnosis and Treatment. Bernard J. Mintz.

Am. J. Surg. 70:196 (Nov.) 1945.

In both initial and late cases of meniscus injury, surgery is indicated as soon as diagnosis is determined. Cases with osteoarthritic changes, as evidenced by persistent symptoms and disability, are not suitable subjects for operation in military service. Complete excision of the meniscus should be done in all cases. The method advocated for this purpose requires two incisions for a visual approach to both joint compartments. Prognosis is generally good. Persistent symptoms postoperatively, which cannot be attributed to altered joint mechanics, knee strain or quadriceps weakness, are usually due to other coexisting pathologic conditions, such as early arthritic changes (rheumatoid or osteoarthritic), chronic synovitis or chondritis.

Postoperative care includes early exercises of the quadriceps (after the third day), weight bearing and active exercises after the tenth day and restriction of strenuous joint activity for about two months post-operatively.

Low-Voltage Galvanization in Sinusitis. E. Kupfer (London).

J. Laryng. & Otol. 60:79 (Feb.) 1945.

Research has revealed that electrical currents may act in two different ways, locally by virtue of vascular changes and lethal effects on microorganisms and bacteria and systemically by a stimulating action on vital autonomic centers.

The possibilities of low-voltage galvanism in the treatment of infection have been neglected in the course of modern progress and discoveries, though it is well-known that in the treatment of sinusitis, operations and the use of short waves may be harmful; that heat and ephedrine often give only transitory relief, and that even sulfonamides and penicillin are frequently without effect.

In a great majority of cases the quantities and densities of current described proved sufficient to free patients of symptoms.

Early tentative attempts at an explanation mentioned effects of syneresis and ion transfer in addition to the power of electrical currents to draw the bactericidal bloodstream towards points of application.

In general, bacterial protoplasm is negatively charged on the surface, has a tendency to migrate if possible to the anode, and consists essentially of micellar suspensions in fluid, as pointed out by Zinsser and Bayhe-Jones.

Simultaneously with the quick and striking clearing and drying up of the discharge, there are obvious effects on the circulation and the general condition of the patients immediately after the treatment. It is therefore difficult to decide at present, whether the action is local or systemic or both.

The points of application of the positive electrode are on vital autonomic centers, and those of the negative electrodes are near local sites of the affliction.

The technic described is simple.

The Use of Fluorescent Wheals in Determining Extent and Degree of Peripheral Vascular Insufficiency. J. Locke Neller.

Ann. Surg. 122:901 (Nov.) 1945.

Two methods of producing wheals were used with equally good results. The simpler one (superficial scratches) was recommended for clinical use, and the other (intradermal histamine injections) was preferred as a gross experimental method.

The histamine-wheal test has been the only practical clinical way of utilizing the known fact that wheal formation is specifically dependent upon the presence of adequate vascular flow. Experience has upheld the basic truth that absence of a wheal response to this substance indicates marked impairment of circulation.

Wheal fluorescence (both scratch and histamine) is a valuable new method in the study of peripheral vascular diseases. Fluorescent scratch wheals are recommended for routine clinical use; fluorescent histamine wheals are preferred for experimental studies. There are only two observations necessary to answer the problem of peripheral vascularity; i. e., presence, and depth (intensity) of whealing. All other corollaries (wheal size, time of appearance, pseudopodia, flares) are either undependable, or unnecessary. Previous predictions regarding the clinical applicability of the test are upheld.

Treatment in Physical Medicine: Some Aspects. Mary T. Ormsby.

Brit. J. Phys. Med. 8:134 (Sept.-Oct.) 1945.

As an art to be acquired and practiced, progressive muscular relaxation has uses not easily found in other means; but it is not an easy thing to learn nor is the habit of its practice easy to acquire. Skilled teachers who can work in a suitable room with carefully chosen patients are required, and patients should report from time to time after they have finished their course. The author believes we are all weary of being told that we live in an age of speed, haste and confusion and that relaxation is wise, without an indication being given that there is a special course in which we can learn how to relax.

The nervous irritable patient, who is such a source of trouble to himself and those with whom he has to live, has usually an exaggerated sensitivity to discomfort and pain and the tension in his mind makes him hold part of himself in a vice of his own spasm. Small wonder that many persons with chronic or recurrent fibrositis are of this type. Faulty posture of the head, which to so large an extent controls posture of the rest of the body, usually characterizes this group. The tense knitter syndrome is another instance of the vice. Many patients ask for treatment of stiff and painful left shoulder and neck, who have been using the left arm and hand to hold the knitting and have been wielding needles, with more motion, with the right. The spasm interferes with the circulation in the affected muscles, and once the shoulder is "reconditioned" by physical therapy, and the knitting time abandoned or drastically reduced, the trouble does not recur.

The advice to smile and whistle when annoyed has a sound basis in conditioned reflexes. Relaxation of body does bring with it some relaxation of mind, and the two are valuable restoratives. Undoubtedly, a mind well poised and easily coming back to its center, as it were, when it has been temporarily pushed off, is the greatest good. Not all patients, so far, can have or profit by psychologic treatment even when it is desirable. Half a loaf is better than no bread. Differential relaxation, when muscles not immediately in use can be partially relaxed (as in driving a car and doing certain kinds of work) is most useful.

Physical Medicine in the Royal Air Force the Central Medical Establishment. Sir Morton Smart, and Basil Kiernander.

Brit. J. Phys. Med. 8:130 (Sept.-Oct.) 1945.

All the rooms are well appointed, airy and comfortable, with ample supply of hot and cold water on all floors, each of which is served by a passenger lift. Most types of physical treatment are available, such as exercises, massage, galvanism, graduated muscular contractions, infrared, ultraviolet, short-wave diathermy, surgical diathermy and manipulation.

"Dead Hand" in Users of Vibrating Tools. E. D. Telford; M. B. McCann, and D. H. MacCormack.

Lancet 2:359 (Sept. 22) 1945.

That the long-continued use of vibrating tools will lead to the onset of the Raynaud phenomenon has been known for many years.

These earlier cases developed after the use of pneumatic tools, and the cold exhaust air was generally regarded as the cause of the trouble. That this is not the case is shown by the onset of the Raynaud phenomenon following the modern practice of using high-speed electrically driven tools, in which there is no question of a cold exhaust.

Peripheral Nerve Injuries in European Theater of Operations. Management, with Special Reference to Early Nerve Surgery. R. Glen Spurling. J. A. M. A. 129:1014 (Dec. 8) 1945.

The excellent results obtained by the peripheral nerve injury program in the European Theater of Operations were at least in part due to the expansion of the Physical Therapy Service proportionately with the neurosurgical load. The Chief Surgeon's Office cooperated fully in this respect, by the authorization of additional space and equipment, the assignment of available Army personnel in excess of Table of Organization specifications and, whenever possible, the employment of trained British civilian personnel. As a result, the Physical Therapy Service became one of the most important departments of every neurosurgical center.

Recent experiments and clinical studies have indicated that daily galvanic stimulation of denervated muscles will prevent atrophy and retard fibrosis, and this measure was therefore employed as a routine in all cases, beginning with fifteen brisk contractions daily and progressing gradually to thirty contractions. When casts were used for postoperative immobilization, windows were cut over the bellies of the paralyzed muscle groups and galvanic stimulation was begun the day after operation. Other measures included massage, active and passive motion and the use of dry and moist heat as indicated. Particularly careful attention was given to the active and passive motion of small joints. Fixation by splints was kept at a minimum, detailed instruction of the patients in respect to the care of their own joints being considered more important than mechanical methods of fixation.

A routine adopted for the management of peripheral nerve injuries in the European Theater of Operations was based on fundamental surgical principles modified, as circumstances required, to bring them into accord with the exigencies of the military situation.

The essential features of the program were (1) debridement and delayed primary closure of the wound, with approximation or anchoring of the severed nerve ends if they were visualized at the first operation; (2) suture of the divided nerve within twenty-one to ninety days after wounding,

but preferably between twenty-one and twenty-eight days, when the least technical difficulties and the best end results can be expected; (3) a judicious use of immobilization during transportation and after neuroorrhaphy, preferably by removable splints; (4) preoperative and postoperative physical therapy.

Response of Chronic Simple Glaucoma to Treatment with Cyclodiathermy Puncture. Frederick W. Stocker.

Arch. Ophth. 34:186 (Sept.) 1945.

Two types of diathermic treatment have been recommended for glaucoma. In both types the diathermic current is applied to the ciliary region, thus influencing in one way or another that area of the bulbus which is supposed to play an important part in the mechanism for regulating the intraocular pressure.

Cyclodiathermy puncture with 16 cases of chronic simple glaucoma has proved to be a harmless procedure as deleterious complications have not developed in any case. Its influence on the tension and the general course of the disease is generally beneficial. The lowering of the tension is of long duration, and there is much hope that by refining the technic and repeating the procedure when necessary permanent stabilization of the intraocular tension may be achieved even in those cases which show a tendency toward rise of tension after a certain time. Cyclodiathermy puncture has certain definite advantages over other operations used for glaucoma simplex. It seems to work regardless of the type of glaucoma. No late infection is to be feared. No tendency toward stimulating the development of opacities of the lens can be demonstrated. No rapid deterioration after the operation in advanced cases, as frequently seen in some of the other procedures, occurs. It therefore may be applied safely in all stages of chronic simple glaucoma. As shown in this study cyclodiathermy puncture is effective also for the Negro and may well become the method of choice for the treatment of the severe disease in this race. A careful observation of the technic as outlined is essential.

Chronic Fatigue. Adolphe Abrahams.

Lancet 2:6371 (October 6) 1945.

Chronic fatigue is a common ailment. Equivalents such as weakness, tiredness, weariness, exhaustion, lassitude, or lack of energy may each possess some essential distinction, but all are on the whole regarded as denoting the same sort of sensation with resentment at the inability to accomplish as much as others apparently do or as the sufferer believes he is entitled to expect.

The manual worker seldom seeks advice for such a symptom unless there is some pathologic state. The sufferer from organic disease rarely mentions fatigue except incidentally. Traditionally, asthenia is associated with certain grave diseases, myasthenia gravis, Addison's disease, malignant disease, diabetes, tuberculosis and pro-

found anemia. Myxoedema and the debility following certain infections, especially influenza, may be included. The majority of the patients were deficient in physical signs or in the revelation of abnormalities by accessory aids to diagnosis.

Management of Nerve Injuries in the Late Stages. **Frank Turnbull.**

Canad. M. A. J. 53:440 (Nov.) 1945.

According to the author, we are indebted to the Russians for stressing the concept of rehabilitation of the limb as a whole in peripheral nerve injury. A recent article by Luria seems to explain why the Russians can be so enthusiastic about recovery, even after freak operations that include the use of alcohol-fixed cadaver grafts. There is little emphasis placed on recovery of function in the nerve that has been divided. There is stressed a type of exercise and mechanical training that will teach the patient how to overcome his handicap. Trick movements are purposely developed and encouraged. A man with a rigid claw hand is provided with tools which have special handles that can be firmly held in this type of hand. With the aid of these handles on his tools the man finds that he can keep up with his fellow workmen who have two normal hands. For patients with wrist drops, tools such as hammers are provided with long handles that tuck under the upper arm and provide stability.

A Study of Spasticity and Paralysis. Philip F. Wagley.

Bull. Johns Hopkins Hosp. 77:218 (Sept.) 1945.

There are two elements in paralysis of cortical origin, loss of control of certain movements and alteration in the tone of the muscle. In hemiplegia, these two qualities are present in various degrees. When the site of the lesion is capsular or cortical, histologic sections of the spinal cord, if they reveal damage, show changes in the area commonly assigned to the lateral corticospinal (pyramidal) tract. The residual alteration in the tone of the muscle in such cases is usually hypertonic and is frequently associated with phenomena that are characteristic of spasticity. It was concluded, therefore, that these physiologic facets resulted from the corticospinal tract damage. Although more critical analysis of clinical, pathologic and experimental studies has revealed the error in this concept, the location of the spinal cord fibers, the interruption of which results in spasticity, has not been ascertained. It is the purpose of this study to demonstrate that spasticity and paralysis are two physiologic states having separable anatomical bases in the spinal cord. In so doing consideration has been given in detail of the effects of pyramidal and various spinal cord lesions on skeletal muscle. Certain physiologic results have been ascribed to damage to particular fiber groups. The effects of the lesions made in this experiment have been compared with the sequelae of other central nervous system lesions.

Pain Following Injuries of Peripheral Nerves. **James C. White.**

U. S. Nav. M. Bull. 45:857 (Nov.) 1945.

Painful neuromas, causalgia, and pain in phantom limbs occur most frequently in emotionally unstable persons with superimposed vasomotor disorders. Pain is produced by partial or complete injuries of the nerve trunks, especially when there has been chronic sepsis and scar tissue formation around the joint of nerve injury. Anoxia, abnormal vasomotor discharge and other forms of sympathetic excitation of the hyperirritable sensory nerve endings appear to play a fundamental role in the production of pain.

In its most severe forms the pain, unless relieved at a relatively early date, will result in addiction to morphine and deterioration of the personality. Under these circumstances the pain pattern appears to become fixed in the cerebral cortex, so that no peripheral interruption of the sensory pathways can relieve it.

In treating difficult problems of this sort, the fact must always be borne in mind that any ineffectual and mutilating procedure, by adding another psychic trauma, must inevitably result in further suffering and loss of morale. Operations which fall in this category include repeated excision of neuromas, neurectomy, periarterial sympathectomy, reamputation at higher levels and resection of the posterior spinal roots. Operations which deserve a trial and helpful points in their selection, are discussed.

A Simple Method of Cure for Flat Foot. T. Stacey Wilson.

Clin. J. 74:233 (Nov.-Dec.) 1945.

When the author was a medical student at Edinburgh some 65 years ago he began to suffer from flat foot as the result of an unusual amount of standing when he began his work in the hospital wards. He sought the advice of a surgeon, and he was told that if he would walk and stand on his toes as much as he could and throw more weight on to the ball of the little toe than on to the ball of the great toe he would soon be well. He did this and the pain in his foot soon ceased.

When muscles are too weak to admit of the elevation of the arch of the feet while standing, it may be necessary to give exercises which will strengthen the tibialis anticus and the peroneus longus muscles, on which the support of the arch is dependent. In order to demonstrate the necessary movement the patient sits on a table with the knees wide apart and then moves the foot up and down in an inverted position so that as much of the sole as possible is brought into view. The peroneus longus and to a less extent the tibialis anticus are responsible for this movement. As soon as the patient understands what is necessary a weight is hung on each foot which can be lifted without undue exertion some 15 to 20 times in succession. The simplest way to provide the necessary weight is to turn a duster into a bag in the usual way, by knotting the corners together and then putting into it the requisite number of large pebbles, or bits of brick.

Every few days, as the muscles regain their vigor, a few more pebbles or bits of brick must be put into the bags. The repetition of these exercises many times a day together with the effort to walk and stand on the toes rather than on the heels will soon cure a case of flat foot.

Cyclodiathermy in Secondary Glaucoma. M. I. Auerbach.

Am. Rev. Sov. Med. 3:37 (Oct.) 1945.

Fifty years of work in a large ophthalmologic hospital, have led the author to believe that the best method of treatment for compensated primary glaucoma is a timely corneoscleral trephine. In neglected cases with greatly reduced visual fields, in retinal hemorrhages, or in cases tending to such hemorrhages, it is better to perform a preliminary scleral trephine in the equatorial region with a simultaneous corneoscleral trephine. There remains, however, a large group of secondary glaucomas due to aphakia, subluxation or luxation of the lens, complications of contusions and penetrating eye injuries. Cyclodiathermy is an effective method of treatment in hypertony following an increase in the secretion of the aqueous humor. This produces atrophic changes of the ciliary body and leads to a reduction of the aqueous secretion and to a fall in the intraocular pressure.

Cyclodiathermy is simple, not dangerous, frequently very effective, and does not hamper further operations in case it is ineffective. For this reason we believe that this procedure deserves greater attention of ophthalmic surgeons.

Disuse Atrophy of Skeletal Muscle. W. B. Ayre.

Canad. M. A. J. 53:355 (Oct.) 1945.

A case is presented of permanent disuse atrophy in skeletal muscle as a result of a fracture sustained ten years earlier. The development of the concept of disuse atrophy as related to skeletal muscle is outlined. The possible etiologic factors are discussed. The importance of inability to actually shorten an immobilized muscle with contraction is pointed out. The pathologic changes are described; and possible causes for the occurrence of permanent changes with atrophy are discussed.

Rehabilitation. Harold Balme.

Practitioner 155:289 (Nov.) 1945.

The application of physical methods to the restoration of vital capacity after serious affections of the chest has been carefully studied at Brompton Hospital and other chest centers, and a successful technic evolved. Patients who are to undergo serious thoracic operations, go through a special course of breathing exercises before operation, which are repeated throughout the whole postoperative stage, and similar methods are employed in the treatment of cases of pneumonia, emphysema, and other pulmonary conditions associated with respiratory defects or lack of chest expansion. Special courses of exercises have been adapted for use in the treatment of bronchial asthma and of bronchiectasis. The ap-

plicability of methods of rehabilitation to cardiac disorders has been the subject of a special memorandum, issued by the Cardiac Society in 1944, in which attention was drawn to the type of patient likely to benefit by active methods of exercise combined with appropriate occupation.

Experience has proved that the incidence of postoperative chest complications and of recurrent hernia has been largely reduced by the adoption of a carefully planned course of breathing and abdominal exercises, both before and after operation. It is claimed that the risk of thrombosis and of visceral prolapse is considerably reduced by the adoption of such measures, and a similar claim is made for the routine use of abdominal exercises after child-birth. There is reason to suppose that gastric and intestinal disorders, involving long periods of rest in bed, would also react favorably to a well-planned program of rehabilitation exercises and occupational therapy. There is room for research and experiment in this field.

Acute Infectious Polyneuritis (Guillain-Barre Type). Joseph G. Chusid, and Gilbert H. Marquardt.

Ann. Int. Med. 23:858 (Nov.) 1945.

Six cases of acute infectious polyneuritis of the Guillain-Barre type with clinical onset in India are reported. Preceding gastrointestinal tract disease was noted in four cases and may be related to the onset of neurologic symptoms. The fact that many of these cases were primarily diagnosed as acute anterior poliomyelitis seems worthy of notation. The differentiation from acute anterior poliomyelitis can be made chiefly on the findings of albuminocytologic dissociation of the cerebrospinal fluid.

The Management of Rheumatoid Arthritis. Richard J. Stevens.

West Virginia M. J. 41:192 (June) 1945.

Rest in bed is essential throughout the acute and subacute phases of arthritis. To secure local rest for joints, splints of various sorts often are helpful since their use relieves pain and relaxes spastic muscles, aids in preventing or overcoming contractures and hastens the absorption of edema and effusion. Analgesics for pain and discomfort consist chiefly of the salicylates.

Heat is an indispensable aid in the treatment of arthritis. Local applications of heat in any form provide temporary comfort. The use of wet dressings in acute conditions is soothing. Dry heat is more easily used in the form of an electric baker or an electric light cradle. The use of diathermy is palliative. Ultraviolet radiation with full body exposure is a valuable aid in general tonic therapy. Fever therapy provides transient relief of symptoms, especially after the acute state has passed. Generally, results of this procedure have been disappointing. Since it is felt that fever need not be raised above 103 F. to give beneficial results, intravenous typhoid vaccine usually suffices.

MEETINGS OF PHYSICAL THERAPY ORGANIZATIONS

In these columns will be published information about meetings of physical therapy organizations. New data should be sent promptly to the office of the Secretary, 2 E. 88th St., New York 28, N. Y.

American Congress of Physical Medicine, 24th Annual Session, Hotel Pennsylvania, New York, September 4, 5, 6 and 7, 1946; **Instruction Course** to be held during the meeting; Dr. Richard Kovács, 2 East 88th Street, New York 28, Secretary. See announcement elsewhere this issue.

Eastern Section, American Congress of Physical Medicine, Washington, D. C., Saturday, April 13 all day and evening. Dr. G. J. P. Barger, 1125 Buchanan Street, N. W., Washington 11, D. C., Secretary.

Midwestern Section, American Congress of Physical Medicine, Chicago, Illinois. Watch for announcement of date and program. Dr. C. O. Molander, Michael Reese Hospital, Chicago, Secretary.

New York Society of Physical Medicine; meetings on first Wednesday, from October to May, New York City; Dr. Madge C. L. McGuinness, 51 East 87th Street, New York 28, Secretary.

The Pennsylvania Academy of Physical Medicine; meetings at the Philadelphia County Medical Building, 21st and Spruce Streets. For 1946 schedule inquire of Secretary, Dr. Harold Lefkoe, 1824 Spruce Street, Philadelphia 3.

Southern California Society of Physical Medicine, Secretary-Treasurer, Dr. Clarence Dail, 802 Acacia Street, San Gabriel, Calif.

American Physiotherapy Association, 1946 Annual Conference, to be held in June, 1946; dates and place to be announced. Executive Secretary, Mildred Elson, 1790 Broadway, New York 19, N. Y.

National Council on Rehabilitation; Fourth Annual Meeting, Ritz-Carlton Hotel, New York City, April 24 and 25, 1946; Executive Director, Chauncey S. Truax, 1790 Broadway, New York 19, N. Y.

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* Kovács, R.: Electrotherapy and Light Therapy, 1942, p. 155.



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|--|-------------------|-------------------------|------------------------|------------------|---------------|--------------------|---------------------------------|
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| University of California Hospital, San Francisco ¹ | Frances Baker | Margery L. Wagner | e | 12 | Mar-Oct | \$150 | Certificate |
| Stanford University, Stanford University, Calif. ¹ | Wm. H. Northway | Lucille Daniels | a-b-d ² | 10 | Quarterly | \$409 | Cert. or Degree |
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| Bouvé-Boston School of Physical Education, Boston | Arthur L. Watkins | Constance K. Greene | c ³ | 26 | Sept | \$400 yr. | Degree |
| Harvard Medical School, Boston | Frank R. Ober | Janet B. Merrill | a-b-c | 9 | Varies | \$300 | Certificate |
| Boston University, College of Physical Education for Women, Sargent College, Cambridge, Mass. | Louis Howard | Adelaide L. McGarrett | H.S. | 26 | Oct | Varies | Degree |
| University of Minnesota, Minneapolis ¹ | Miland E. Knapp | Sara E. Kollman | a-b | 12 | June-Sept | | Cert. or Degree |
| Barnes Hospital, St. Louis | F. H. Ewerhardt | Beatrice F. Schulz | a-b-c | 9 | Oct | \$200 | Certificate |
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|--|---|--------------------|-----------------------------|---------------------------|--|------------------------------|-------------------|
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| Kalamazoo School of Occupational Therapy, Western Michigan College of Education, Kalamazoo | Western Michigan College of Education | 3 yrs. | FebOct | 1 yr. coll. | \$76 ¹ | Dipl. & B.S. | 14 |
| Michigan State Normal College, Ypsilanti | Michigan State Normal College and Univ. of Michigan | 5 yrs. | SeptFeb June | High sch. | \$67 | Cert. & Deg. | 7 |
| St. Louis School of Occupational and Recreational Therapy, 4567 Scott Ave., St. Louis | Washington University | 3 yrs. | Oct | 2 yrs. coll. | \$350 | Dipl. & Deg. | 17 |
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The Adaptability of Present Day Concepts of Convalescent Training and Physical Rehabilitation to the Civilian Practice of Medicine. F. A. Hellebrandt, M.D., Richmond, Va.

Psychiatry Needs Occupational Therapy. Blanche Montgomery Meyer, M.D., Instructor, Medicine, Ohio State University Medical School; President, Ohio State Occupational Therapy Association, Columbus, Ohio.

The Challenge of Crutches. George G. Deaver, M.D., Associate and Medical Director, Institute for the Crippled and Disabled; and Mary Eleanor Brown, M.A., Physical Therapy Technician, Institute for the Crippled and Disabled, New York.

Exercises for the Convalescent Bed Patient. G. Mosser Taylor, M.D.; J. Wayne McFarland, M.D., and Anna Bond. From the Departments of Orthopedic Surgery and Physical Therapy College of Medical Evangelists, Los Angeles, Calif.

The Effects of Hypothermia and Hyperthermia on Motor End Plates in Skeletal Muscle. Eben J. Carey, M.D., Dean, Marquette University School of Medicine, Milwaukee, Wisconsin.

The Functional Anatomy of the Shoulder Girdle. Daniel P. Quiring, Ph.D., and Erna L. Boroush. From the Cleveland Clinic Foundation, Cleveland, Ohio.

Walking Reeducation, Practical Demonstration and Discussion Presented by the Ohio Chapter of the American Physiotherapy Association.

The Treatment of Sciatica by Alternating Current. Abraham Cohen, M.D., Philadelphia.

Studies on Neuromuscular Dysfunction, IV. Neostigmine Therapy of Acute and Chronic Cervical Intramuscular Fibrositis. V. Neostigmine Therapy of Acute and Chronic Backache. Herman Kabat, M.D., Ph.D., Passed Assistant Sanitarian (R); and Charles W. Jones, M.D., Passed Assistant Surgeon (R). From the Division of Public Health Methods and the Hospital Division, United States Public Health Service, Bethesda, Md.

Recognition and Treatment of Common Deformities Found in Convalescent Poliomyelitis. Robert L. Bennett, M.D., Director, Graduate School of Physical Therapy; Director of Physical Medicine, Georgia Warm Springs Foundation, Warm Springs, Ga.

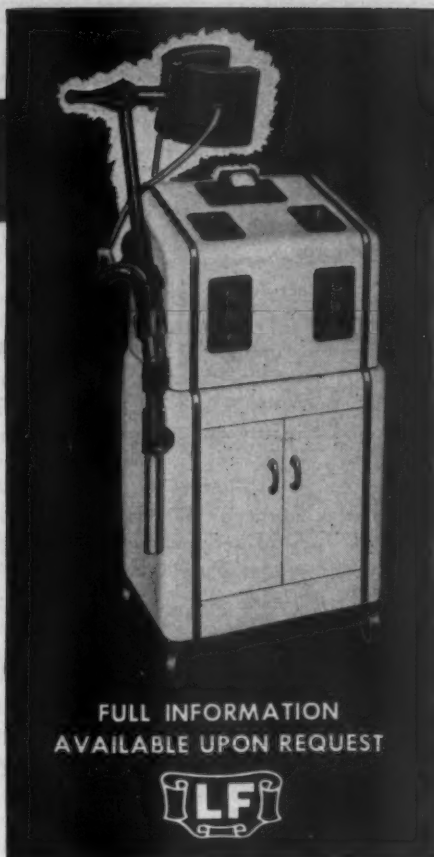
Results of Kenny Treatment of Infantile Paralysis in the Acute Stage. Miland E. Knapp, M.D., Clinical Professor, Radiology and Physical Therapy, University of Minnesota Hospital, Minneapolis.

Artificial Fever-Chemotherapy. (From the Fever-Chemotherapy Section, Chicago Intensive Treatment Center of the Chicago Board of Health.) H. Worley Kendall, Surgeon (R) U. S. P. H. S., Chicago; Robert C. Craig, P.A. Surgeon (R) U. S. P. H. S., Chicago, and George X. Schwemlein, P.A. Surgeon (R) U. S. P. H. S., Chicago.

Mapping Sensory Nerve Injuries. G. D. Wilson, Major, M.C., Chief Physical Medicine, Oliver General Hospital, Augusta, Georgia.

Graphic Method for Rapid Estimation of Clinical Status in Poliomyelitis. E. T. Williams, M.D.; F. H. Top, M.D., and Louise Suchomel, R.N., Detroit, Mich.

The Physics of Short Wave Therapy. Kurt S. Lion, Department of Biology and Biological Engineering, Massachusetts Institute of Technology, Cambridge, Mass.



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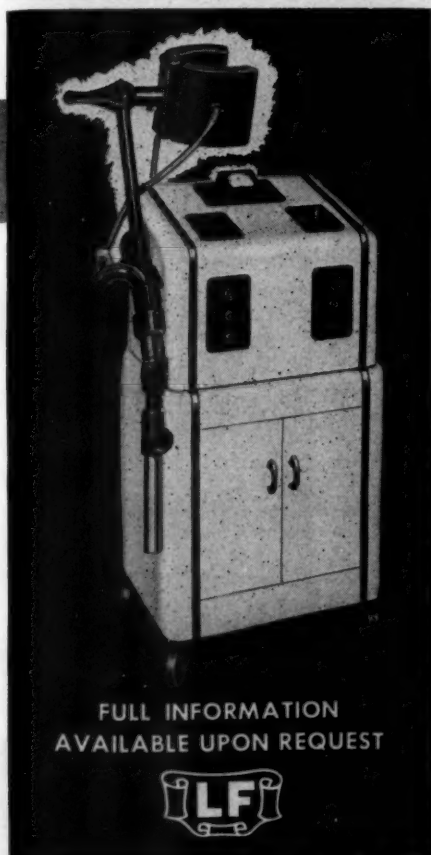
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AMERICAN CONGRESS OF PHYSICAL MEDICINE SPRING SESSION EASTERN SECTION

In Conjunction with the New York Society of Physical Medicine and
the Pennsylvania Academy of Physical Medicine

SATURDAY, APRIL 13, 1946

WALTER REED GENERAL HOSPITAL

WASHINGTON, D. C.

Morning Session — 9:00 A. M.

Registration followed at 9:30 by orientation talk by Lieut. Col. Ben Boynton, M.C., A. U. S. Tours in small groups will be shown the entire program for physical medicine. There will be explanatory demonstrations and discussions.

Luncheon — 12:30 Noon

May be secured on hospital grounds at personal expense.

Movies:

During Luncheon interim, several movies will be shown.

Afternoon Session — 2:00-5:00 P. M.

Message of Welcome: Commanding Officer, Walter Reed General Hospital.

The Place of Neostigmine in the Therapy of Chronic Arthritis.

HERMAN KABAT, M.D., Washington, D. C.

Problems of Arthritis Treated by Physical Medicine.

HARRY KESSLER, Major, M.C., Bronx, N. Y.

Causalgia and Its Treatment.

KARL HARPUDER, M.D., New York, N. Y.

Rapid Rehabilitation Following Hand Injuries.

HAROLD LEFKOE, M.D., Philadelphia.

Modern Physiologic Concepts of Spinal Cord Function and Poliomyelitis.

ERNST FISCHER, M.D., Richmond, Va.

A Consideration of Certain Physiologic and Kinesiologic Principles That Are Frequently Neglected in the Application of Therapeutic Exercise.

COMDR. CHARLES D. GIAUQUE, U. S. N. R.

Evening Session — 7:00-10:00 P. M.

Banquet:

Hotel Lee Sheraton, 15th and L Streets, N. W., Washington, D. C. 7:10 P. M.
(Reservations at \$2.50 per person should be mailed no later than April 10 to Isadore Levin, M.D., Doctors Hospital, Washington 6, D. C.)

Program:

High Lights of Physical Therapy as Seen at Walter Reed General Hospital, 1941-45.

DONALD L. ROSE, Major, M.C., Washington, D. C.

The Future of Physical Medicine in the Navy.

HOWARD H. MONTGOMERY, Capt. (MC), U. S. N.

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Walter Reed General Hospital

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THIS MEETING IS OPEN TO PHYSICIANS AND THEIR GUESTS